BULLETIN **FIELD MUSEUM OF NATURAL HISTORY**

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SHOUT
SHARE
IT

75th Anniversary Lecture Series

Earth, Life and Man

Winter Lectures
February 2 - March 9

Carnivorous reptile Dimetrodon *grew to 10 or 11 feet. The back fin was a notable feature of this Permian animal.*

February 2
COLLECTING FOSSILS AS A MUSEUM ACTIVITY
Dr. Everett C. Olson, Research Associate, Geology

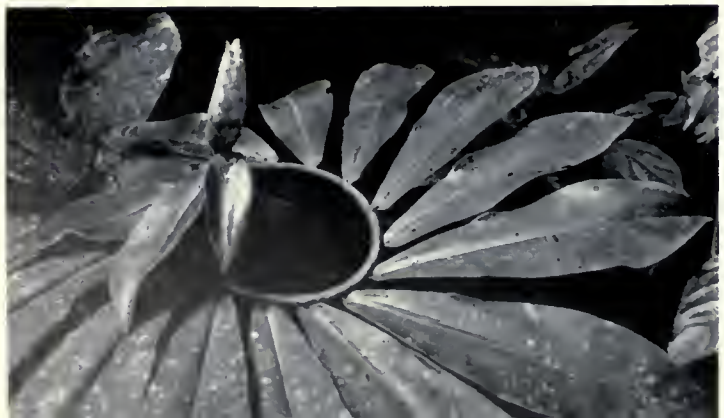
Museum activities from the viewpoint of vertebrate paleontology opens the winter series. Dr. Olson will describe his experiences collecting fossil reptiles and amphibians from the Permian (230 million years ago) river deltas. These studies have led from ancient red beds of Texas to museums in Europe and the Soviet Union and formed bases for his scientific publications.

U. S. Fish and Wildlife field party in Michigan collects live larval lampreys with portable electric shockers. The sampling indicates the incidence of the destructive fish and determines whether control programs are needed in the area.

February 9
CHANGING FAUNA OF THE GREAT LAKES
Loren P. Woods, Curator of Fishes

Many changes have taken place in the fishes and fisheries of Lake Michigan in the past 40 years. Mr. Woods has accompanied commercial and research vessels on trips to different areas of Lake Michigan over many years and will draw upon this long experience in reviewing the nature and significance of the changing lake fauna.

This member of the ginger family, genus Costus, *has flattened growth in bright sunlight, as opposed to normal slow spiral growth in the shade.*



February 16
A WEALTH OF BIOLOGICAL DIVERSITY: THE PLANTS OF COSTA RICA
Dr. William C. Burger, Assistant Curator, Vascular Plants

The Republic of Costa Rica, part of the narrow isthmus linking North and South Ameirca, is one-third the size of Illinois, yet has as great a diversity of flowering plants as the entire eastern United States. This is only partly explained by the large altitudinal range from low, typically tropical areas to cool mountain tops. Dr. Burger's talk centers around this diversity and will be illustrated with color slides.

"Earth, Life and Man," the 75th Anniversary lecture series by Museum Curators, will open its winter group of meetings on February 2 and continue on successive Sundays at 2:30 p.m. in the Lecture Hall through March 9.

As in the first group of lectures, emphasis will be placed on research activities of the scientific staffs in the Museum's anthropology, botany, geology and zoology departments. Purpose of the talks is to bring Museum Members into closer contact with work being done in the departments and to increase understanding of the physical and biological world and the nature, history and evolution of life on earth.

The "Earth, Life and Man" series is intended primarily for Museum Members but admission will also be open to interested members of the general public. Details of the spring group of Curator lectures, which will close the series, will appear in a later BULLETIN.

February 23

INHERIT THE WHIRLWIND

Dr. John Clark,
Associate Curator,
Sedimentary Petrology

The beginning of the cooling which led to the last Ice Age is marked in the rock strata of 35 million years ago. These rocks also show evidence of weather cycles of various durations which are continuing now. This geological record shows that our weather results from two great atmospheric power systems, one dominant in summer, the other in winter. Dr. Clark will explain how careful study of how these functioned in the past may someday enable us to predict specific weather months in advance.

Dark cloud partially veils an extraordinarily powerful bolt of lightning.

March 2

THE GENTLE ART OF RUBBING

Dr. Kenneth Starr,
Curator, Asiatic Archaeology and Ethnology

An insight into an ancient Chinese graphic arts technique and some of its modern western variations will be given by demonstration, slides and "idle chatter." Dr. Starr is engaged in writing a book on the subject of Chinese rubbings which will be published soon.

"Galloping horses" are portrayed in this rubbing of a second Century Chinese clay mortuary tile.

March 9

TULLY MONSTERS AND OTHER WONDERS —SOME BYGONE MARINE CREATURES OF NORTHERN ILLINOIS

Dr. Eugene S. Richardson,
Curator, Fossil Invertebrates

In the past decade, strip-mining southwest of Chicago has brought to light hitherto unknown animals that lived offshore, on the edge of a Pennsylvanian delta. Many of these are entirely soft-bodied—jellyfish, worms and the Tully Monster—preserved in concretions. Both the Museum and private amateur collections now include representatives of species unknown to science and found nowhere else. Dr. Richardson and Professor Ralph Johnson of the University of Chicago are making these animals known in a study program.

Artist's rendering of the habitat of marine fauna in the seas of Pennyslvanian Illinois.

Archaeologists Honor Paul Martin

THE Alfred Vincent Kidder Award for outstanding contributions to American Archaeology was presented recently to Dr. Paul S. Martin, Field Museum's Chief Curator Emeritus of the Anthropology Department.

The award, a bronze medal, was established in 1950 and is awarded every three years by the American Archaeology Association in recognition of leadership and outstanding contributions to the field of New World prehistory and Archaeology. Dr. Martin, interestingly, worked in 1929 as a graduate student under the guidance of Dr. Kidder, a leading American archaeologist in whose honor the award was created. While working with Dr. Kidder, Dr. Martin discovered the Temple of the Three Lintels at Chichen Itza, Mexico, and was responsible for its excavation and reconstruction.

However, for the past 40 years, his primary interest has been the study of the American Southwest, especially Anasazi and Mogollon prehistory. He is a firm believer in student involvement in archaeological work and has conducted a formal summer program at Field Museum's field station in Vernon, Arizona, since 1964 under a National Science Foundation grant. His interest in music and sense of humor have brightened the field camp routines there. Students awaken to Bach and work hard to the sounds of the Beatles from a loudspeaker.

His published reports on archaeological sites in New Mexico, Colorado and eastern Arizona have filled a dozen volumes of the scientific series, *Fieldiana: Anthropology*, and one section of the upcoming exhibit on the Museum's 75th Anniversary will be devoted to Dr. Martin's work.

Although he retired as the Chief Curator of the Anthropology Department in 1964, after holding that post for 30 years, he continues actively in research at the Museum and conducts a graduate seminar in anthropology at the University of Chicago.

In receiving the award, Dr. Martin was cited for various innovative applications of theories concerning the interrelationships in time and space of cultural traditions of early Southwestern peoples and to pottery classification techniques and for his use of computer processing in the evaluation of archaeological data. He is one of the few in his field to be successful in utilizing this resource.

In the conclusion of an, as yet, unpublished essay, "The Revolution in Archaeology," Dr. Martin wrote ". . . I have changed substantially in both my orientation and techniques. I have proceeded from the traditional approach to a fresh and primary concern with testing hypotheses concerning human behavior."

"In the future, I hope to maintain this momentum by investigating and adopting any new, valid techniques that will allow for a fuller understanding of human behavior. I do not fear changes; I welcome them."

The Kidder Award bronze medal bears on one side a design taken from a carved slate mirrorback excavated by Dr. Kidder at Kaminaljuyu in Guatemala. The reverse (right) is a conjectural detail of a Southwestern cliff dwelling. The designs and sculpturing were executed by Tatiana Proskouriakoff, an earlier recipient of the Kidder Award.

The Grand Canyon Trip, Field Museum's September Natural History Tour, will be a geological field trip for energetic people. Involving as it does sleeping under the stars, all-day rough hikes up and down the canyons and a week of exciting river travel, the Grand Canyon Trip demands vigorous members. Dr. Matthew H. Nitecki, Assistant Curator of Fossil Invertebrates, leads the trip. This trip has been planned to provide the maximum possible comfort. Hotel accommodations are of the best (as are the horses and mules) and the boat one of the safest. But read Dr. Nitecki's day-by-day account of the trip for the complete story. Pre-trip seminars will be conducted on the natural history of the area.

This trip, like others in Field Museum's series of Natural History Tours, includes a tax-deductible donation ($200) in the total cost of $1,025, covering plane fare, hotels and all other costs for the 17 days. (Single rooms are additional.) The tour is limited to 28 persons, so make your reservation as soon as possible. The deposit, to be enclosed with the reservation, is $200.

The River That Flows Through Time

By Matthew H. Nitecki, Assistant Curator, Fossil Invertebrates

This month's cover shows two aspects of exploring the Grand Canyon—an exciting ride on the Colorado rapids and the peaceful view from a riverside campsite as night falls. Below: *Author and son hike along the Bright Angel Trail.* (Photos by Dr. Nitecki, Igor DeLissovoy and William D. Turnbull)

THE traveler arriving in Grand Canyon may be given enough time to stand on the South Rim and to gaze in wonder into the depth and silence of the chasm before being hurried away in his chartered bus to somewhere else. If he is lucky and has more leisure he may be allowed to hike part of the way down to the River along a trail as busy as Fifth Avenue on Easter Day.

But there is another Grand Canyon that no man in a hurry sees: The Grand Canyon of exquisite loveliness, grandeur and solitude.

Each area of the Earth has its peculiar beauty. In Grand Canyon this appears in its sculpture and in its paintings. The variegated horizontal rock layers are deposited upon the preceding flaming layers, and new layers are stacked one upon the other, pushing their way upward in steep slopes and sheer walls. The figure of buttes, the character of cliffs, the uniqueness of shapes, the intense colors are all drastically changed from one giant step to another.

Each area of the Earth has also its own majesty. Grand Canyon is so immense that to all appearances time is stopped, sound is frozen and motion is nonexistent. Only clouds move silently against the stationary heaven. It is in the presence of such majesty that man hears how his heart counts the seconds, and how life flows by. It is here that the questions of Beauty and Earth are as profound and eternal as the Canyon below is deep and endless.

And each part of the Earth has its loneliness. The stillness of the Canyon is so absolute that at times the falling of the desert petals can be heard. The loneliness of the Canyon is so profound that in its presence man often whispers in order not to disturb it, in fear of being overheard and out of respect to the gifts of Nature.

Such is the Grand Canyon and the River that we will walk through, float on, and experience. There were lonely men who for weeks walked along the precipitous walls with the heat of the day their only companion. Others floated down the River in small wooden boats, fought the currents of the rapids and spent hours in treacherous portages. Now, yearly crowds come by the thousands, stay a few hours, litter the rim and depart noisily with souvenirs and polaroid pictures. We will do neither. We will hike on the safe and well-maintained trails, we will float on large and respected rafts and we will arrive after the crowds depart when only the faithful few quietly watch the birds hover over the desert.

Friday, September 12, 1968

The trip will begin in the afternoon with the flight to Phoenix, Arizona. From there we will travel by bus from the desert of central Arizona through the grass and forests of northern Arizona to the pine woods of the South Rim. We will pass the 12,000-foot-high San Francisco Mountains south of the Grand Canyon. The South Rim is on the Coconino Plateau about 7,000 feet high. It is a flat area, a part of the great Colorado Plateau. The weather at the rim requires a sweater at night and often during the day. A raincoat might be occasionally needed. In September the nights will frost, the mornings will be crisp but the days should be pleasant, warm but seldom over 80° F. For dinner and the night we will be in the Lodge in Grand Canyon. Evening will be spent in a campfire program with the naturalist's talk.

Saturday, September 13

The first short half-day hike down along the upper part of the Hermit Trail will be one-and-a-half miles long and will descend less than one thousand feet. It will serve as an introduction to wilderness hiking and to the geology of the area. The rocks exposed in this trip are all of Permian age and are about 250 million years old. The walk will be on a path maintained by the Park but closed to the public, except for guided tours.

The Canyon hike is a reverse of a mountain hike; the uphill work comes at the tired end. Plenty of time and water, a hat, long sleeves and sun tan lotion are required.

The afternoon will be spent in a relaxed enjoyable nature trip along the rim. The one-mile-long trip will concentrate on scenery and vegetation and will end at the Yavapai Museum featuring geologic exhibits.

Dinner and the night's rest will be in the Lodge and in the evening there will be song singing at the campfire.

Sunday, September 14

To see Grand Canyon from the Rim is an enduring experience. But descending into it is unforgettable. The perspective and dimensions of the Canyon are entirely new and hiking all the way is most rewarding. Thus, our first long hike will be to the River down the Kaibab Trail. The hike is about 7 miles long and one mile down. Hiking boots, water canteen, a shoulder bag for packed lunch and physical stamina are required. To avoid blisters, particularly common on steep down-slopes, the boots must be comfortable and well broken in. Woolen socks are also recommended.

We will walk slowly; in fact, a good part of the day will be spent on the descent, during which we will carefully study the geologic sequences of the rocks and interpret the scenery. In the evening we will swim and relax by the pool at Phantom Ranch. We will dine and sleep soundly at the Ranch.

Monday, September 15

In Grand Canyon, because of its great range of elevation, temperature and moisture, several major life zones occur. Thus, at the River the climate is that of the Sonoran province of Mexico. Plants and animals are scarce and

Above: *View from the South Rim of the Grand Canyon.* Right: *Barrel cactus, typical canyon bottom vegetation.* (Photos by William D. Turnbull and Igor DeLissovoy)

of the desert. Cacti, agave, yucca and lizards are common. We will hike about 3 miles to the Indian Gardens. We will travel upon a flat River trail for about one mile. Two miles will be steep, rising 1,300 feet up, with pauses to study the "hard-rock geology" of the Inner Gorge and observe the change in vegetation with the increased altitude. The rest of the way (3,200 feet) up to the South Rim we will travel on mules. We will enter the next life zone, the Upper Sonoran, recognized by its juniper and pinyon trees. On the top of the Rim the already familiar ponderosa pine is common.

Dinner and night will be back in the Lodge. For those who still have enough energy there will be another campfire program.

Tuesday, September 16

Tuesday morning will be devoted to an introduction to the ancient Indians of the Grand Canyon area. Leaving the Park, we will stop at the South Rim's Tusayan Museum to examine the partially excavated Tusayan ruins built by the Pueblo people around 1200 A.D. The Rim itself has never been densely populated; however, the adjoining area between the San Francisco Mountains and the Little Colorado River had at times as many as 8,000 inhabitants. This population concentration was caused by the increased fertility of the land, enriched by the action of otherwise destructive volcanos near Flagstaff. The best preserved ruins are at Wupatki Ruins National Monument, which we will visit.

Our afternoon stop will be in the Sunset Crater National Monument. The Monument features a cinder

Cultivated fields are visible in this aerial view of the dramatic setting of the Havasu Indian reservation in the Grand Canyon country.
(Photo by S. Silverstein)

cone 1,000 feet high that was built about 1065 A.D. It was the eruption of this volcano that transformed a desert into the fertile farmland that was occupied by the Wupatki Indians. However, the agricultural prosperity was short-lived and by 1300 A.D. the soil was destroyed by wind and drought and the Indians moved out. We will climb the volcano that so much controlled the life of the Indians and study the many aspects of volcanic activities, the lavas, cones and fissures. Our night will be spent in Flagstaff where we'll visit the Museum of Northern Arizona. The Museum is situated at the base of the 12,000-foot volcanic San Francisco Mountains and is surrounded by rich forests and cool grasslands. It is a delightful regional Museum of Science, Art and Anthropology that "displays ideas and not things." We have arranged for an evening tour.

Wednesday, September 17

This is an exciting day that, after the bus ride from Flagstaff to the Hualpai Hill, will include a hike to Havasu Canyon, perhaps one of the most beautiful and interesting canyons in the west, a tributary of Grand Canyon and in the National Park. We will walk down, and the walk will be long and strenuous, somewhat over 10 miles long. The longest part of it will be through the hot desert canyon along the dry stream bed. The unexpected richness of life and the beauty of the Canyon due to Havasu Creek, along which we will walk the last 3 miles, will be a reward to the thirsty and the tired. This unusual stream has its origin but a short distance above the Supai Village and because of the ruggedness of the Canyon and its precipitous walls the stream forms spectacular waterfalls cascading down and forming pools of clear and exquisite beauty in which we'll swim and cool ourselves after the long hot journey. We will camp down below the village in the National Park Camp Grounds.

Thursday, September 18

The Havasupai tribe are the only Indians living within the Park. They are peaceful people said never to have killed a white man. Their history is old, their occupation of the Havasu Canyon probably dating from the twelfth century. They supported themselves in the past by agriculture and basket weaving, and are known to have been expert horsemen. Today they appear as a tribe of ancient grace and charm and a kind of sadness. We will spend a day in the company of these people and in examining the geologic processes that are best manifested in their country. After our Wednesday hike we'll rest, swim and take gentle short hikes in and around the village. We'll camp out again in the Park's Camp Ground.

Friday, September 19

On horseback we will ride the trail to the Hualpai Hilltop from where by bus we will proceed to Lees Ferry. Lees Ferry is situated between Glen and Marble Canyon and between Echo and Vermillion Cliffs. It is the only place in a stretch of about 500 miles where the River leaves its steep Canyons and allows for easy approach from the adjoining plateaus. Lees Ferry, a historical crossing, was also the Navajos' trading center. We will spend a night there in a motel.

This is the end of the first part of our Grand Canyon Tour. The geology we learned in this part is from the great sequence of rocks representing about a fourth of the Earth's history. The complete history includes the period of no life, the period of life's beginning that is obscure, and the period of "good" fossil record. We have examined the ancient marine communities consisting of numerous sea shells, sponges, corals, sea lilies and other invertebrate animals. We walked on rocks representing the early terrestrial environments full of footprints of reptiles and impressions of tree-like ferns.

Non-biologic aspects of this history we studied from rocks of the Inner Gorge that were formed miles deep in the earth, or were altered under such high temperature and pressure that it is now impossible to decipher their original nature. The walls of the outer Canyon are made of a great thickness of shales, sandstones and limestones. The shales were deposited in shallow seas by great Rivers of the past. The limestones were precipitated from warm semi-tropical seas by action of innumerable organisms, and the sandstones were formed by consolidation of sand blown by wind into giant dunes surpassing the recent Sahara in their extent.

Saturday, September 20 through Sunday, September 28

Our second part of the Colorado trip will consist of a nine-day river trip in order to understand the River, her power, and the tools she uses to carve this great Canyon,

and, of course, for the sheer joy and excitement of the River adventure. We will find, however, that is it a Natural History trip providing an excellent opportunity to study and understand the natural processes that formed this great and unique region of the country.

The boat trip will be on rubber rafts of the American River Touring Association, a non-profit educational association. Mr. Lou Elliott, the director and leader of the boats, who has experienced many American, Canadian and Mexican rivers says that: "in all the world there is no other trip to compare with a river run through the Grand Canyon. Its unparalleled continuation of grandeur and intimacy, excitement and calm is a unique scenic adventure. The side canyon campsites and comradeship of fellow passengers live long afterwards as unforgettable experiences. The ideal way to see and enjoy the Canyon is from the river that made it. This intimate approach allows us to get close enough to really observe, to photograph and to marvel at the endless variety of beauty and texture of the canyon walls. The rapids are exciting and provide a thrilling experience none can forget."

It is on the River that we will experience, learn and understand the Canyon, the River and the Great Southwest. A day-by-day account of the river trip is difficult to give in advance, because the water level changes and thus controls the selection of campsites.

We will "shoot" an unending line of rapids, some of which are but a riffle of no danger to equipment or personnel, while others are difficult rocky cataracts dropping 15 feet, very dangerous to small and to wooden boats, but only exciting to our big 48-foot pontoons. At no time will we need to portage, but we will have to hold fast with both hands, and secure the luggage well. We'll get wet and tired—but happy and pleased.

We will camp out on sandy beaches, without tents or shelter—but since it will not rain, the stars and the walls of the canyon will be our companions at night. We will eat hungrily the food prepared by the crew—and their food is good.

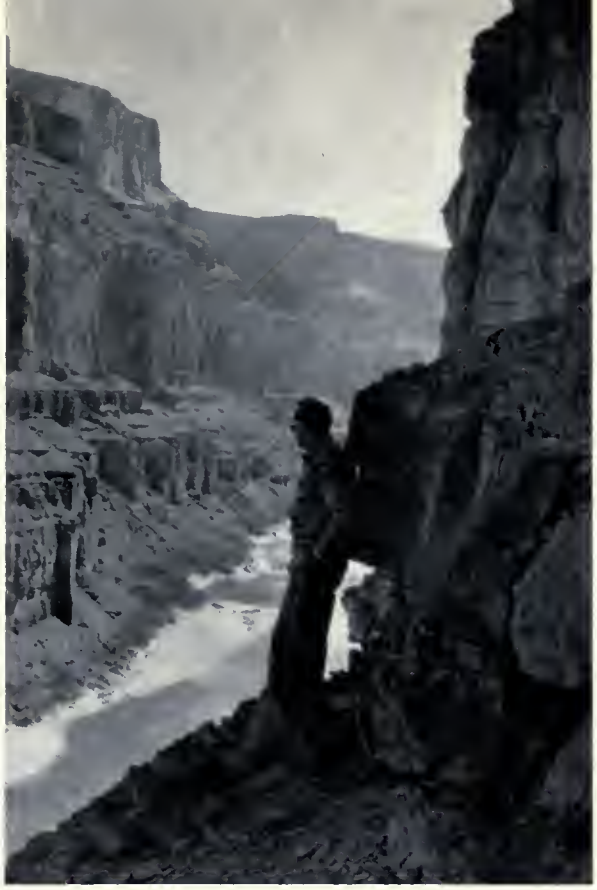
We will travel in two boats and thus rotate passengers to be able to photograph the passage of the rapids. We will swim in the Colorado, close to shores with life jackets on, and without jackets in the tributaries where we will dive, jump in or just soak. We will hike to places of unusual geologic and anthropologic interest, sometimes through the most pleasant and enchanting stream beds and valleys, at times along steep walls and waterfalls.

But above everything else, we'll live nine days of Geology. We will think Earth while we eat, swim, dream, walk and relax. We will see and study more Geology in this one brief period than can be seen anywhere else in comparable time.

The trip will end at Lake Mead from which we'll travel by bus to Las Vegas airport to fly home—sad to leave the Great River and a grand fortnight of our lives, but happy and proud to have experienced it.

The Grand Canyon Tour will end here, where the Colorado Riv flows into Lake Mead.

Boat passenger's view of one stretch of the Colora



Left: *Traveler rests on a rugged trail enroute to ancient Indian ruins near the entrance to the Park.* Below: *Lunch break along the Colorado River gives tour members time to relax and talk over their experiences.* (Photos on these pages by Igor DeLissovoy)

rapids.

Hikers brave a exposed trail ear Deer Creek

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I would like..... reservations for your Grand Canyon Tour and I enclose my
(HOW MANY)
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☐ Please check if single rooms are desired, at extra charge.

Please send information about this tour to my friends listed below:

Name .....

Address .....

City..... State..... Zip .....

Name .....

Address .....

City..... State..... Zip .....

We don't know whose it was but it wasn't

Cleopatra's

By Christopher Legge

Custodian of the Collections, Anthropology Department

THE marble Greco-Roman sarcophagus on display along the west wall of the Museum's Egyptian Hall probably draws only casual glances from most visitors, yet on the eve of the World's Columbian Exposition in 1893, this same artifact caused a brief minor furor.

During the 1890's, popular interest in things Egyptian was rising in intensity. It was natural, then, that this interest would be reflected in some of the Exposition exhibits. Among the attractions there were a "Temple of Luxor" and the "Streets of Cairo," where a dancer called "Little Egypt" caused both sensation and scandal. The sarcophagus, too, was to have been a prominent part of this turn-of-the-century extravaganza and although this never came to pass, the artifact's checkered history is an interesting one.

It was discovered in 1888 by workmen digging a well near Alexandria. Unfortunately, the discovery was unattended by any scientific investigation, a lack which has defeated later attempts to place it historically. In unearthing the sarcophagus, the funerary chamber was destroyed and the debris scattered. However, it was soon put on display with this astonishing notation:

"Sarcophagus of Queen Cleopatra, discovered at Ramleh, near Alexandria. This sarcophagus was found at a depth of 30 feet, but for the convenience of visitors, it has been lifted to its present position."

A second label read, "For particulars apply to Mr. G. N. Frangouli, Tobacconist, Alexandria."

Despite this shaky documentation, "Halligan's Illustrated World's Fair," which described itself as a "Pictorial and Literary History of the World's Columbian Exposition," wrote in its issue of September, 1891, "the recent discovery . . . of Queen Cleopatra, is by far the most valu-

able find yet made in curio-fraught Egypt. The proposition to bring this interesting historical relic to the World's Fair at Chicago makes a consideration of the discovery particularly opportune. The principle bas-relief is the central one, which represents the head of a woman. This is a magnificent specimen of the sculptor's art: the woman has an asp on each temple and agony is depicted in the expression of the face, which is a remarkable one. The well-shaped nose, with its full nostrils, the determined jaw indicate the masterly spirit of a woman accustomed to command. The forehead is rather low but there is evidently a massive head behind that and when one compares this bust with that on one of the coins struck in Cleopatra's reign, the likeness is at once perceptible. Among the remains found in the sarcophagus was a skull of unusual size with a low forehead and a great development at the back of the head—undoubtedly that of the voluptuous queen."

Colonel Samuel Lawrence James, an ex-Confederate army veteran and prominent citizen of New Orleans, was travelling in Egypt about the time the article appeared and bought the sarcophagus from the Egyptian government, paying $4,000.

A Chicago newspaper clipping of unknown date, but probably shortly before Col. James died in 1894, gives the information that owing to a number of complications, he decided not to exhibit it on the Fair grounds. It would, however, together with the remains of Cleopatra and a number of mummies, be soon exhibited at a store at 335 Wabash Avenue, which had been converted into an exact but smaller reproduction of the famous temple at Denderah. The article claimed that leading scientists had no doubts that the sarcophagus was that of Cleopatra. Details of this establishment have been lost in obscurity and its site, now 514 S. Wabash, is occupied by George Diamond's Steak House.

In 1904 and probably for several years before, the sarcophagus lay in Blakelee's warehouse on S. Western Avenue. In that year, Mr. S. L. James, Jr., as executor of his father's estate, gave it to Field Museum. In a letter to the Museum's Director he said that although his father had bought it under the assumption that it was Cleopatra's, he could not vouch for its authenticity.

The sarcophagus, without a reference to its possible connection with Cleopatra, is mentioned in the Museum's annual report as being part of the most important acquisitions through gift for the year. Several other Egyptian artifacts were included in the acquisition. Any association with "one of the most imperious, wilful and wicked of the world's women" ("Halligan's Illustrated World's Fair") has become even more improbable since then. Present-day archaeologists believe that the central bas-relief represents Medusa and that the sarcophagus is one of a group of Alexandria sarcophagi of Proconnesian white marble from quarries on the island of Marmara in the sea of that name and that in round figures they can be dated between 150–250 A.D., 180 to 280 years after Cleopatra's death.

The sarcophagus, largely unnoticed in its present dignified setting, has travelled from Ramleh to Wabash Avenue to Field Museum, missing its chance to become a part of the great World's Columbian Exposition along the way, but nonetheless a subject of astounding claims and, later, of academic inquiry—all without revealing its history. To that extent, its mysterious aura remains.

Presumably taken during its excavation in 1888, the sarcophagus is shown at Ramleh, where it was first displayed publicly and touted as being that of Cleopatra.

Colonel Samuel L. James, who bought the sarcophagus but declined to display it at the Columbian Exposition. The Museum acquired it from his estate in 1904.

1968 Street Expedition:
Field Work in Iran

Field Museum and the Iran Game and Fish Department cooperate in intensive mammal survey

The hazards of museum expeditions sometimes include last minute changes and in the case of the 1968 mammal survey led by Field Associates Mr. and Mrs. William S. Street, the change was in the destination. At the eleventh hour, the Streets and the three young scientists who are accompanying them were heading for Iran instead of Turkey.

A complication came about when the Streets learned a Turkish mammalogist had planned a study similar to theirs. Hearing of this problem, an official of the Iran Game and Fish Department wrote the Streets, urging that they bring their expedition to Iran. The Streets had led one expedition to Iran in 1962. In 1968, they found not only the cooperation of friends there, but a co-sponsor for the expedition in the Iran Game and Fish Department. Mr. Eskander Firouz, Secretary General of the department, confirmed this by cablegram and Mr. Street flew to Tehran to work out operational details.

Months of field work have been accomplished since then. This expedition concentrated on a survey of the mammals of the mountainous western provinces of Iran. The party has collected specimens and has studied the ecology of each place more intensively than was possible during the earlier, wider-ranging Street expedition.

One member of the Iran Game and Fish Department, who cooperated extensively in many areas of the expedition, is Jerry Hassinger, Leader of the Terrestrial Wildlife Unit and in 1965, a member of the Street expedition to Afghanistan. Hassinger worked on the expedition data at Field Museum after returning to this country; preliminary results have been published in the Museum's series, *Fieldiana*. The game department arranged that a local department official meet the expedition at each new site to advise and help in the field work. It also provided a cook and a preparator of specimens. In Tehran, a game department warehouse served the expedition in storing extra supplies, spare parts and gear, and the headquarters office provided a mailing address and expedited services during reprovisioning visits. Extra vehicles were also loaned by the department at times.

Field Museum has provided the experienced expedition leadership of Mr. and Mrs. Street and a scientific team, mammalogists Daniel Womochel and Anthony DeBlase and parasitologist Richard Rust, in the cooperative venture. These

Expedition campsite at Koorang in the Zagros Mountains, at an altitude of 8000 feet. In the foreground are Baktiaris, who live in the area.
(Photos by Daniel Womochel, Expedition Mammalogist)

Sayed Shakrala of the Pasteur Institute of Tehran is one of sereral Iranians who worked with the Street expedition.

The ecology of each site is studied so that preparation of plant specimens is also important, here undertaken by Mr. and Mrs. Street.

Co-sponsor of the expedition is the Iran Game and Fish Department which supplied personnel and equipment. These expedition members include (from left) *Hassein, a driver; a game Department hunter; Mr. Farhard Gosamie, a Game Department official, and Kamal, the cook.*

Above: *Parasitologist Richard Rust and Mrs. Street record data from the specimens.* Left: *Mr. Street and Iranian game department personnel buy specimens from two Baktiari shepherds.*

people planned the field work and brought with them two specially-equipped International Travelalls, collecting equipment and recording supplies.

The Museum has the right and responsibility for scientific study of the collected specimens and scientific publication on the results of the expedition effort. After study at Field Museum, the mammal specimens will be preserved there as vouchers of the accuracy of the scientific publications, for future examination and for any further study by qualified investigators. A synoptic series will be shipped to the Iran Game and Fish Department for use as an educational collection.

The Game and Fish Department has the privilege of presenting popular aspects of the expedition in Iranian newspapers and magazines.

Dispatches from the expedition in the field report very successful results from five campsites at localities distributed along the mountainous area of western Iran. Working an average of 8 days in each locality, the expedition accumulated masses of recorded observations on the ecology, physiography, weather, plants and animals and collected many specimens. At the beginning of the last circuit afield, the specimen count includes more than 1,500 mammals, more than 10,000 ectoparasites, more than 400 reptiles and amphibians and 125 plants. The field work was scheduled to end on December 25.

Education Chief Retires

Four Decades of Achievement for Miriam Wood

Miss Wood with a few of the thousands of children she has guided through the Museum during her long career.

After a 38-year career in Field Museum's Raymond Foundation, the Department Chief, Miss Miriam Wood, retired on October 18.

She began her long and active career as a guide-lecturer in 1929 and in 1940 became Chief of Raymond Foundation. Under her direction, Raymond Foundation expanded and developed in several areas. Miss Wood was concerned not only with the formal groups visiting the Museum, but with the many children and families who came here and did not know exactly what they wished to see or what the Museum had to offer. She suggested the interest and energy of such individuals might be directed by a series of simple guide sheets, an idea which grew into the highly successful Journey Program. This program has served since as a model for many other museums.

Miss Wood was also a prime mover in the development of the Saturday Morning Workshop Series for children and grandchildren of Museum Members. As active supporters of the Museum, she believes Members and their children should enjoy special benefits from Museum resources. In the Workshop Program, elementary school-age boys and girls are guided in programs which include actual handling of artifacts in Museum research areas and in-depth tours of specific exhibition areas. The fifth consecutive series of workshops has just been completed and proved to be extremely popular.

The bulk of the Raymond Foundation activities centers around the hundreds of groups which visit the Museum throughout the year. Guides and tours are provided for as many groups as can possibly be accommodated, although the mushrooming number of schoolchildren visiting the Museum makes it impossible for every group to have a guide-lecturer. In 1929, Miss Wood's first year with the Raymond Foundation, 480 school groups, a total of 21,576 children were provided with guide-lecturer programs. What a contrast to 1967, when 57,830 children in 1,598 school groups benefitted from these tours.

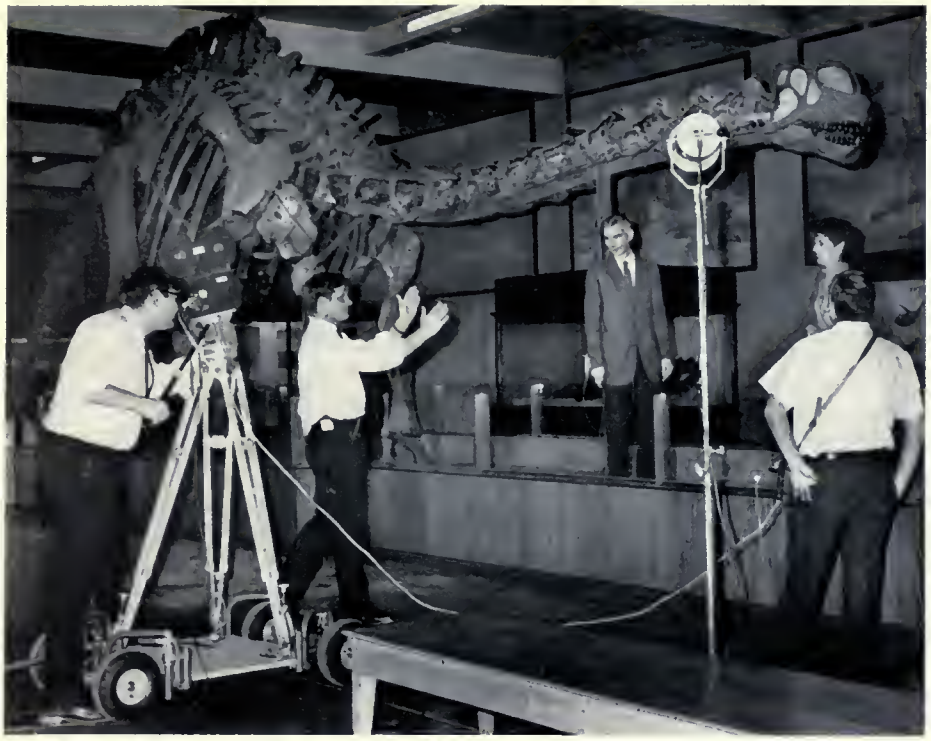
Her outstanding ability as an educator and administrator has brought her to national prominence in several museum-oriented organizations. At the first session of the International Seminar on the Role of Museums in Education 'UNESCO' held in 1952, Miss Wood was a delegate representing the Natural History Museums of the United States. She has also been a member of the American Association of Museums, serving as chairman of the Children's Museum Section from 1953 to 1954, and at different times has held the positions of program chairman, president and council member of the Midwest Museums Conference. She was a member of the International Council of Museums from 1960 to 1968 and served as a consultant to the Girl Scout Program Committee from 1959 to 1968.

Miss Wood's active participation in professional organizations has been typical of the enthusiasm and dedication she has displayed in furthering the aims and goals of museum education. In the midst of many demands made upon her time, she has maintained her warmth, patience and energy and, perhaps most importantly, her sense of humor and deep regard for people and their feelings. On more than one occasion her keen appreciation for the ridiculous has "saved the day" for her staff. Alert to the varied talents of her staff, she has always sought to bring out the best in those who worked with her.

We of Raymond Foundation view Miss Wood's retirement, richly earned though it is, with mixed emotions. Thousands of visitors to the Museum have benefitted from her interest and dedication to museum education but none more than those of us who were privileged to work with her for so many years. The all too frequent modern approach to life in general and education in particular of substituting form for substance had no place in Miss Wood's philosophy. Her philosophy was a simple and effective one: Know in your own mind that you are doing your best and then go on. She emphasized the positive approach in everything.

It is with the warmest regards of the Museum staff that Miss Wood begins her retirement by pursuing her lifelong hobbies of traveling, photography and reading. Her career has been a richly rewarding one. We in Raymond Foundation, however, reserve the right to feel just a little sorry for ourselves for the loss we have sustained.

—Marie Svoboda
Acting Chief, Raymond Foundation



Two new educational television programs, "Down to Earth" and "From Fish to Mammal," have been written by Ernest Roscoe, Raymond Foundation Lecturer in Geology, for use by the New Trier Township Instructional Television Systems. Roscoe (center) and Mrs. Penny Kneipper, a sixth grade teacher in Wilmette, appeared on the programs, which were filmed at the Museum. These programs reach more than 17,000 students in 25 schools.

CALENDAR OF EVENTS

January hours: 9 a.m. to 4 p.m., weekdays; 9 a.m. to 5 p.m., Saturdays and Sundays. The Museum will be closed on New Year's Day, January 1, and open to 5 p.m. on January 2 and 3.

January 2 A planned series of displays of single outstanding items from Museum collections will open with the exhibit of a Wedgwood medallion of the English circumnavigator, Captain James Cook. Made in 1805, the medallion was a 75th Anniversary gift to the Museum from Mrs. A.W.F. Fuller. A small case in the North Lounge will house the exhibit of these single items, which will be changed periodically.

January 12 Audubon Wildlife Film Series "HAWAII, PARADISE OF THE PACIFIC," narrated by Walter H. Berlet, will be presented as part of the film series sponsored by the Illinois Audubon Society. Admission is free. 2:30 p.m. in the James Simpson Theatre.

Through January 27 JAVANESE PUPPETS The temporary exhibit features colorful shadow and three-dimensional puppets used in the ancient puppet theatre of Java. This is the first public display of these artifacts, which were acquired by the Museum in 1893. Hall 9 Gallery.

Through January Winter Journey "ANCIENT SEA MONSTERS" Prehistoric giants of the ancient seas are featured in the Winter Journey for children sponsored by the Raymond Foundation. Any child who can read and write may participate in the free do-it-yourself program. Journey sheets and information are available an Museum entrances.

MEETINGS:

CHICAGO MOUNTAINEERING CLUB, January 9, 8 p.m.
CHICAGO SHELL CLUB, January 12, 2 p.m.
NATURE CAMERA CLUB OF CHICAGO, January 14, 7:45 p.m.
GREAT LAKES CHAPTER OF SIERRA CLUB, January 21, 7:30 p.m.

Brazil Tour Meetings Set

Three preparatory meetings have been scheduled at the Museum for members of the two Field Museum Brazil Tours.

On January 10 at 8 p.m., Dr. Austin L. Rand, Chief Curator, Zoology, who will accompany Tour A, will speak on Brazilian birds, and Loren P. Woods, Curator, Fishes, will provide information on Amazon fishes. On January 17 at 8 p.m., Brazilian gems and insect life will be reviewed respectively by Dr. Edward J. Olson, Curator, Mineralogy, and Dr. Rupert L. Wenzel, Curator, Insects. On January 20 at 8 p.m., Robert C. Victor, Staff Astronomer of Abrams Planetarium at Michigan State University and a member of Tour A, will speak on the skies of the Southern Hemisphere, and Phil Clark, Tour Leader and Field Museum Public Relations Counsel, will illustrate a talk on Brazilian plants and also review that country's current political situation.

Coupled with recommended reading, these meetings are designed to give a thorough and interesting background on Brazil and the specific areas to be covered on the tours.

Three openings remain for the Brazil Tour B, leaving January 22 and returning February 16. The tour, which will visit outstanding natural wonders, metropolitan areas, the Amazon River country, and include the Carnival at Bahia, costs $2,050 including all expenses and a tax-deductible donation of $500 to Field Museum. Details on the Tour are available by writing: Brazil Tour, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois, 60605.

FIELD MUSEUM
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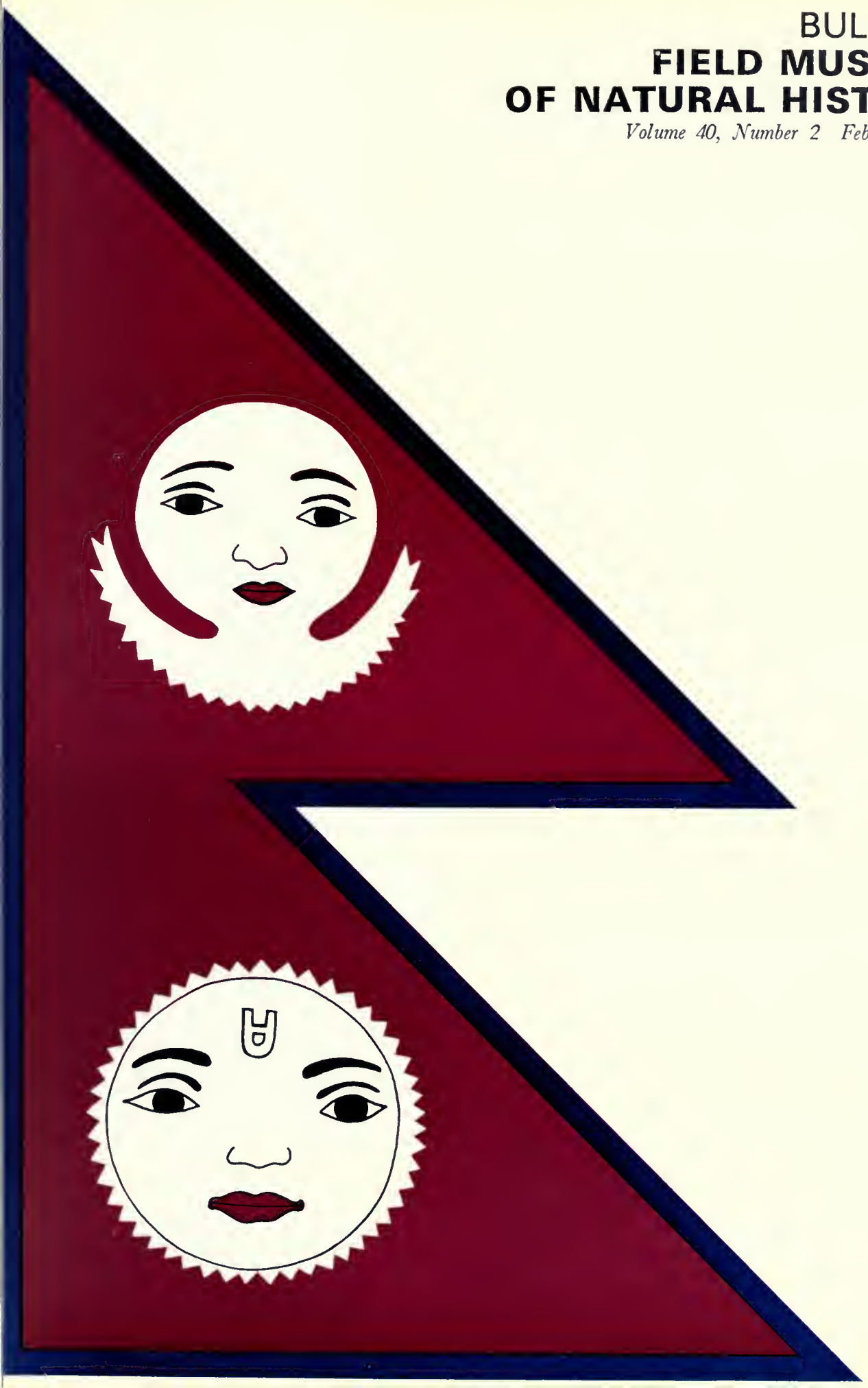


Field Museum's 131st series of Saturday afternoon programs will begin March 1 and continue on successive Saturdays through April 26, at 2:30 p.m. in the James Simpson Theatre. Noted lecturers will offer filmed adventures ranging from the exotic South Seas to the rugged stretches of the Arctic. The series is open to adults and the children of Museum Members.

1969 Spring Film-Lecture Series

March 1

"South Sea Saga"

By John Nicholls Booth

The exciting regions visited by Captain James Cook are re-explored in this color film. Warlike tribes in remote areas of New Guinea, the strange flora and fauna of Eastern Australia and the Great Barrier Reef and the historic and romantic island of Tahiti are featured.

Tahitian Dancers
Booth's "South Seas Saga"

March 8

"Ranch and Range"

By Albert J. Wool

The joys of living close to nature are revealed in this film record of life on Mr. Wool's ranch in the Santa Clara Mountains of California. Close-ups of the wild-life of the region are interwoven with the human side of a way of life familiar to many Americans two or three generations ago.

Rapids
Currey's "Conquest"

March 15

"The Far, Far North"

By Walter J. Breckenridge

The drama of life in the Arctic and sub-Arctic, from Hudson's Bay to the village of Little Diomede, which faces Siberia across the Bering Strait, is featured in this color film. The hardships and rewards of living in this environment are emphasized, as is the area's singular animal and plant life.

March 22

"The Conquest of El Sumidero"

By Jack L. Currey

The first successful navigation of the turbulent Rio Girjalva of the El Sumidero Canyon in Chiapas, Mexico, spells high adventure for a 16-man expedition led by Mr. Currey. Rarely seen archaeological sites and remote Indian villages are also featured.

Moose
Breckenridge's "Far North"

Mt. Cook
Richter's "New Zealand"

March 29

"Western Discovery"

By Laurel Reynolds

Giant elephant seals, killer whales, porpoises, "living tides" of migrating shorebirds, redwood forests—these and many other natural wonders are the stars of this color film which probes the wilderness areas of the Pacific Coast from Mexico to Puget Sound.

April 5

"East Africa Today"

By Arthur C. Twomey

The history-making 1963 election in Kenya in which a native government supplanted British rule is a highlight of this film which tours primitive and metropolitan areas of Kenya and Tanzania, contrasting aspects of old and new East Africa.

Hummingbird
Hall's "Small World"

April 12

"It's a Small World"

By Fran William Hall

The question of why smaller animals have survived and larger, more powerful ones have become extinct throughout periods of the earth's history is examined in this film. Mr. Hall emphasizes the role of small animals in nature with film studies of animals, birds and insects seldom seen because of their small size and secluded habits.

Folk Dancing
Linde's "Czechoslovakia"

April 19

"Discovering New Zealand"

By Kenneth Richter

The contrasting ways of life represented by the ancient Maori people and the recent settlers from the British Isles are explored in this color film which also features the varied and abundant scenic beauty of this island country.

April 26

"Czechoslovakia"

By Richard Linde

Mr. Linde offers a film answer to the question, "What is it like behind the Iron Curtain?" Many aspects of daily living in this Communist country are shown—housing, religion, education, recreation, agriculture and industry. Traditional celebrations which the Czechs continue to observe are also featured.

Blue Macaw (*Andorhynchus hyacinthinus*) is one of Brazil's colorful bird residents.

Brazilian Bird Walk

By Austin L. Rand
Chief Curator, Zoology

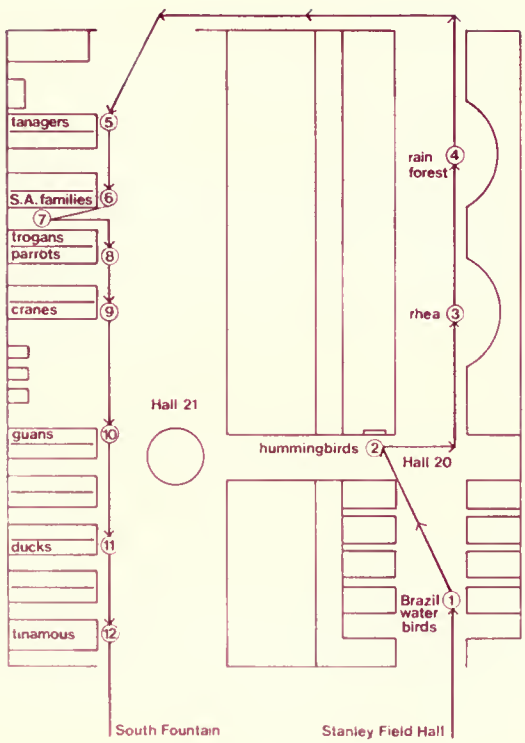
Those unable to take bird-watching walks in Brazil with Field Museum's Brazil Tour this winter can still enjoy a short, leisurely stroll to see that country's exotic bird life right here in the Museum's halls. On this simulated bird-walk, the travel begins at the South Fountain in Stanley Field Hall. (See the detailed map showing the bird walk route and stations.)

The marshes along the Amazon River are the first stop (Hall 20, Station 1). They appear here much as we would see them from a launch trip from Manaus, with floating lily pads, mud bars and great arum leaves backed by swamp forest and palms. A pair of giant jabiru storks with naked, blackish heads and necks dominate the scene, one with a captured frog in its foot-long bill. There are ibis of two sorts, one olive-brown, the other white-necked. A pair of the strange crane relatives called sun bitterns show their beautifully complicated brown, buff, grey and white pattern in a stately dance of male to female. Another strange crane relative with yellow, black-barred feet rests on an arum leaf beneath which nocturnal grey and black boat-billed herons are hiding from the light of day.

Here we also see the advantage of a simulated bird walk past Museum habitat groups. On the Amazon itself the birds would fly away, or hide in the foliage when we approached. Here, we can examine them at leisure—today, tomorrow and the next day, if we wish.

In a darkened recess (Station 2) we see a series of intensely vivid spots of color flashing in rotation. They are patches of iridescence on the plumage of hummingbirds on which a series of tiny spot lights are focused. One by one, the spot lights flash on to give reflections that are vivid half a hall away. No wonder these birds are called living jewels.

We move on to the great grass, tree-dotted plains that dominate Southern Brazil as the rain forest does the Amazon Basin (Station 3). A great, grey, flightless bird, the rhea (an American ostrich), stands watching its nest of eggs, some of which are beginning to hatch. Nearby, a black and white flycatcher rests in a bush and a burrowing owl, the same species native to our west and south, stands by its burrow



Tropical rain forests (Station 4) are similar from Guatemala to Manaus and the hills and escarpments above Rio. They all have the dark green leaves of the forest canopy, the dark, heavily shaded forest floor and an abundance of lianas (climbing vines). In this habitat group, two parties of toucans—big-billed, noisy, mischievous, playful acrobats, similar to jays in temperament—are eating fruits in the treetops. Less extroverted, the woodhewer and woodpecker on the tree trunks and the bishop grosbeak in the undergrowth might escape notice.

After observing the birds of Brazilian swamps, rivers, forests and grass plains in simulations of their habitats, it is valuable to take a close look at the birds themselves. These are in the adjacent hall, where Brazilian birds are represented in a systematic series of birds of the world. We concentrate on the group names first, such as Cotinga, Jacamar, Motmot, Toucan, Trogons, and Tinamous. These birds are unfamiliar to many people, since they live only in the warmer parts of the Americas, part of the great evolution of birds that took place in that most bird-rich part of the world.

Among the most highly evolved perching birds or song birds (Station 5) are the *tanagers,* gay colored fruit eaters of the trees, *sparrows,* including the crested, red-headed Brazilian cardinal and the flocks of seed-eaters of the grasslands, and the *icterids*—the oropendulas, which build hanging nests, the orioles and the grackles. All three are dominant groups of the New World Tropics.

Pausing before the panel of primitive perching birds (Station 6) we see tyrant flycatchers, oven birds (whose big stick or mud nests are conspicuous on the road to Belo Horizonte in Brazil), spinetails and ant birds. This group also includes many common birds of the forest and garden. The related wood creepers share the tree trunks with woodpeckers. There are also the cotingas, such as the bell bird and cock of the rock, and the manakins that dance in the undergrowth. The toucans are related to woodpeckers as are the fly-catching jacamars that look like giant hummingbirds when perched but not when in flight.

The jay-sized, soft-colored motmots (Station 7) which swing their long, spatulate tails in pendulum fashion are related to the kingfishers, birds poorly represented in the Americas. Trogons, with elegant, restrained brightness, are pan-tropical birds with no near relatives. Hummingbirds, in bewildering variety, are true Americans and are related to swifts.

Among the parrots (Station 8) the brilliant blue, yellow and red macaws are commonly seen in gardens, while the green Amazon talking parrots are widely kept as pets.

The great order of cranes and their relatives (Station 9) is an old group that has declined, leaving strange relics that are quite un-cranelike in various parts of the world. In Tropical America are the rails, the strange hump-backed trumpeters that vaguely recall guinea fowls,

Above, Brazilian water birds in a habitat setting. Left, Rhea watches her eggs begin to hatch, in another habitat setting.

the sun grebe and the sun bittern and the long-legged cariamas that run swiftly over the plains. The currassow, guan and chachalaca are fowl-like birds of tropical America related to the barn yard chicken, but are most likely to be found in trees eating fruit.

The muscovy duck (Station 11) is native to tropical America, where they were first domesticated and domestic muscovy ducks all over the world are descended from these. In the same panel are screamers, turkey-sized chicken-footed relatives of ducks, which frequent open marshes. The sharp spur on the wrist is used in fighting.

The tinamous (Station 12) restricted to Latin America, resemble tail-less partridges and are their ecological equivalent. They are related, however, to the ostrich-like rhea, which is seen in the same case.

On our bird walk, we have seen representatives of some birds found only in Latin America. These are part of what we call the Neo-Tropical avi-fauna that arose here while that area was separated from the rest of the world.

Emmett R. Blake, Curator of Birds, is an expert in these Latin American birds and planned and collected some of the exhibits we have seen. He is presently preparing a book of several volumes on Birds of South America, the first of its kind. This will be a valuable source of information for those interested in these birds and in the meantime, a bird walk through the Museum halls will provide an introduction to the birds of South America or almost any other part of the world.

Remick McDowell

Remick McDowell Elected to Museum Presidency

Civic and business leader Remick McDowell has been named the sixth President of Field Museum of Natural History, succeeding James L. Palmer who has retired from the position he has held since 1964.

Mr. Palmer will continue his association with Field Museum as an honorary trustee.

Mr. McDowell became a Museum trustee in 1966. He is chairman, president and a director of Peoples Gas Company and serves as chairman of the board and a director of its subsidiary companies, The Peoples Gas Light and Coke Company and Natural Gas Pipeline Company of America. He joined Peoples Gas in 1940 and has been a corporate officer since 1942.

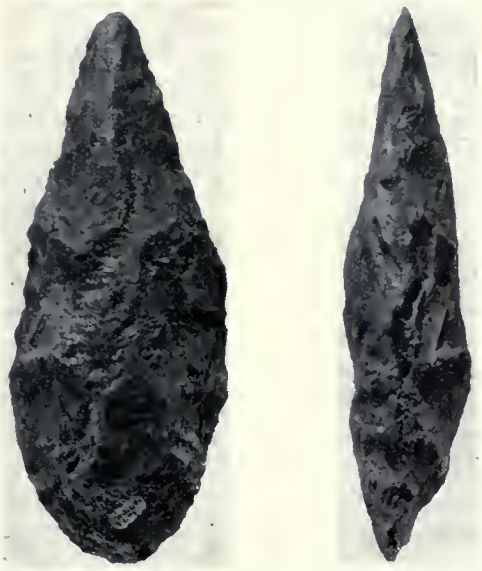
Now 60, Mr. McDowell is also a trustee and vice president of the Orchestral Association and a trustee of the Museum of Science and Industry. His directorships include Amsted Industries, Inc., Harris Trust and Savings Bank and Inland Steel Company. He is a member of the Business Advisory Council of the School of Business, Northwestern University and a member of the Business Advisory Committee of the Chicago Urban League.

Field Museum's new president is a native Chicagoan. He attended Northwestern University and received a master of business administration degree from the University of Chicago in 1954. He is a member of the Chicago Club, Cliff Dwellers, Commercial Club of Chicago, University Club of Chicago and Woodstock Country Club.

Other officers of the Board, all re-elected, are: Harry O. Bercher, Bowen Blair and John M. Simpson, vice presidents; Edward Byron Smith, treasurer and assistant secretary, and E. Leland Webber, secretary and director.

February "Treasure"

Prehistoric Craftsmanship



Front (left photo) *and side views of an Acheulian handaxe found in Central Tanzania. This artifact, which belongs to the University of Chicago, is probably between 60,000 and 75,000 years old.*

A handsome stone handaxe fashioned in prehistoric East Africa will be on display as the "Treasure of the Month" during February in the Museum's North Lounge.

Made in the Acheulian tool-making tradition, the handaxe is 12 inches long and 4½ inches wide, tapering to a point at one end. Although it is oversized in comparison with European stone tools of the same type, it was not unusually large for the site at Isimila in Central Tanzania where it was found, nor for similar tools found at other East African sites. One reason for its large size is the nature of material of which it is made. The large blocks of rock commonly available for use to prehistoric man in East Africa yield large flakes which can be worked into implements. The flint nodules used by prehistoric Europeans are characteristically smaller. The handaxe on exhibit is made of mylonite.

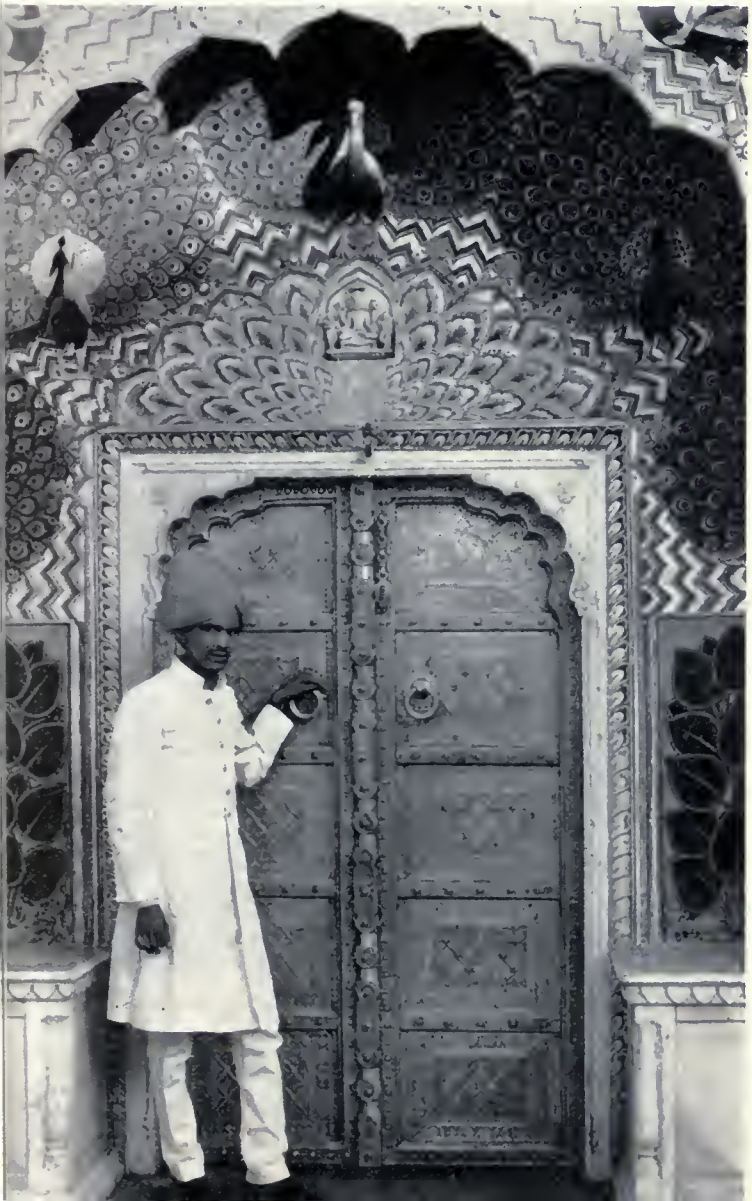
Despite the use of the name "handaxe," this particular kind of artifact likely served several uses and because of its size, probably required the use of both hands. The tool on display shows careful craftsmanship, with straight edges and each side neatly trimmed.

Who the people were that made this handaxe is not known, but it was probably made between 60,000 and 75,000 years ago. Human fossils associated with the final part of the Acheulian tool-making tradition are very rare. The handaxe used in February's display belongs to the University of Chicago.

The "Treasure of the Month" display was created so that single items of particular beauty and interest might be shown to the public on their own merits rather than as part of larger exhibits.

to the himalayan kingdoms and northeastern india

field museum's newest tour



Summing up a trip to the Himalayan kingdoms and northeastern India is like trying to describe a new color. It's fantastic, but has to be experienced to be believed. A trip to the Land of Oz—this comes closer. Indeed, Air India's magic carpet symbol signifies more than comfortable flight.

But as that carpet comes to rest in a strange land, part of the bizarreness is that you yourself have become exotic, to the gently amazed inhabitants. And they are equally exotic to you, with their vast medley of races and complexions, languages, castes and religions—above all their different view of the meaning of life. For you, it is a new vision, both challenging and refreshing. It is a chance to see yourself and your culture as others see it.

The area's natural beauty is equally stimulating and revealing. The Hindu and Buddhist respect for life has, over the centuries, permitted great populations of humans and animals to coexist in often crowded proximity: painted storks calmly fish in a road-side ditch within yards of a man and bullock ploughing; monkeys scamper on a highway jammed with cars and camels, water buffaloes and bullocks, bicycles and cars; or throw peanuts at worshippers in a temple; dozens of iridescent blue-green parakeets shriek defiance from a schoolyard tree, where they nest; animals vulnerable for their immense size—elephants, rhinoceruses and tigers—still roam the forests and wild peacocks strut unharmed in farmers' fields.

You realize why many of these peoples worship the mountains. The sheerly rising, snow-peaked Himalayas form a backdrop, unreal in its wall-like abruptness, to the valley of Kathmandu, or float beyond the jungles and elephant-grass of the Nepalese Terai or rise on every side of Darjeeling and Gangtok.

Ancient temples freeze still living theologies into stone: the writhing soldiers and women, gods and goddesses at Kajaraho and the eloquent marble geometry of the Taj Mahal; the many-armed dieties of Hinduism and the serene face of the teaching Buddha.

Contemporary ceremonies form a living link with the past through almost timeless repetition, the death and renewal of the bathing and burning ghats of the Holy Ganges, the flower-garlanded Hindu worshippers and chanting Buddhist lamas and the dozens of colorful family ceremonies glimpsed on city streets and in country huts.

Add to all this, Field Museum's special interest in the area, which goes back to as early as 1908 when Anthropologist Berthold Laufer went to Sikkim. To bring this interest right into the Tour, Dr. Robert Fleming, associated with the Museum since the mid-thirties in India and Nepal, will accompany us and lead us on bird walks, during our stay in Nepal.

But join us on our magic carpet for 28 days . . .

Friday, January 30, 1970

Having attended three pre-Tour meetings on Indian-Himalayan natural history, many of your 35 fellow tour members are already well known to you when you arrive in midafternoon at O'Hare Airport for the flight to New York. At John F. Kennedy Airport that night, you board the Air India 8:30 London flight.

Saturday, January 31

With a morning arrival in London, you spend part of the day resting in your Grosvenor House room, joining other Tour members for a cocktail meeting in late afternoon. The speaker on Indian cultural history is Mr. Douglas E. Barrett, Deputy Keeper of Oriental Antiquities, the British Museum. In the evening you attend a London theatre performance.

Sunday, February 1

The morning is free and during early afternoon, you choose between tours of the Indian exhibit at the British Museum, the Natural History Museum, The National Gallery and the Tower of London. You fly to Delhi, via Moscow, leaving London at 5 p.m.

Monday, February 2

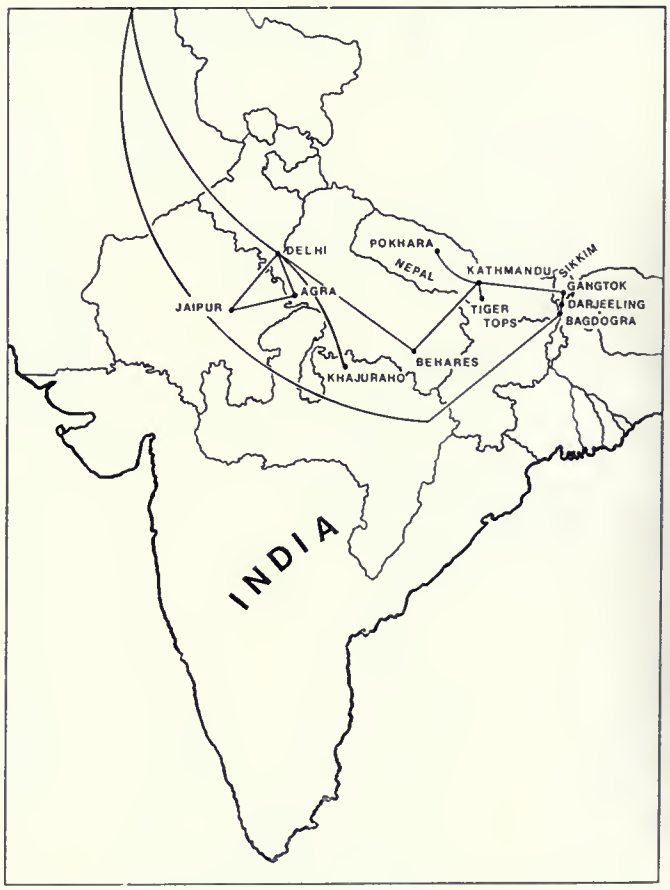
You arrive in early morning and settle at the Hotel Imperial; most of the day is for rest. During late afternoon you visit the Delhi Zoo to see its famous white tigers and hear a report by a geneticist on the complexity of developing this white breed. That evening you are welcomed by Indian hosts at a special cocktail party and buffet. The highlight is a performance by youthful Bhangra dancers.

Tuesday, February 3

You tour old and New Delhi including the 234-foot Qutb Minar built by the Moghuls on Hindu ruins in the 13th century, the 17th century Moghul Red Fort with this legend written on the wall of its throne room in golden Persian letters, "If there is a paradise on earth, It is here," the Presidential Palace and its impressive, Persian-style Moghul gardens, the narrow streets of the bazaar, the Jama Masjid—India's largest mosque—and the modern Hindu temple to the goddess Lakshmi and the god Narayan. You are a guest for morning tea at the home and garden of the Ruci Aibaras—a prominent Parsee family. A cocktail hour talk and demonstration on Indian and Tibetan rugs is given by Mrs. Sam Madhok.

Wednesday, February 4

After a short flight, you arrive at the Rajasthani city of Jaipur, built mostly of rose sandstone by the Rajput Maharaja Jai Singh in 1727. You experience a new transportation thrill—swaying on an elephant howdah up a steep bluff to the 17th century Amber Palace. Though the Maharajas who ruled here were Hindus, the building has marked Moghul influence. Grillwork panels of alabaster are so finely carved that they served the court ladies as windows. Inlay of semi-precious stones and of mirrors is magnifi-



Tour stops on Field Museum's Tour of Himalayan Kingdoms and Northeastern India.

On this month's cover, the flag of Nepal, one of the Himalayan kingdoms on the Tour itinerary.

Left, *The Taj Mahal, breathtakingly beautiful in white marble, seems to float against the blue sky.*

Painted stork hunts on a lakeshore in the Ghana Bird Sanctuary, where millions of birds find refuge.

turies of life are tied together by the Holy Ganges, where itional Hindu ceremonials of life and death, of bathing cremation, continue changeless.

cent. You also view the Hawa Mahal—a five-story, pink sandstone building of honeycomb design. The City Palace Museum contains splendid specimens of Rajput and Moghul paintings and ivory sculptures, wrought gold and carved peacock doors and a handsomely designed garden where monkeys play. During the evening, you attend a party hosted by the maharaja's son at Sisodia Palace. Rajasthani dancers perform. Your hotel is a former palace, the Rambagh.

Thursday, February 5

You visit the Jaipur gem dealers in the morning before taking the short flight to Agra, where you stay at the modern Clark's Sharaj Hotel. You stand in amazement before the incredible Taj Mahal, and realize that none of the photographs you have seen did it justice. It is geometry in marble. The inlay work of semi-precious stones in white marble is probably the finest and most extensive in the world. A local industry continues this handicraft and exquisite inlaid boxes and tables in white or black marble are sold. You are impressed by both the vastness and magnificence of the red sandstone Agra Fort and the white marble Itmad-Ud-Daulah, which predates the Taj and in its delicate way is almost as great a masterpiece. A screen of marble lacework is an impressive achievement. The drive from the Fort to Itmad-Ud-Daulah takes you through a revealing section where most work, play and family life is in the streets.

Friday, February 6

Today is red letter day for both bird enthusiasts and archaeology buffs. You spend the sunrise moments at the Keoladeo Ghana Bird Sanctuary where literally millions of birds live in the trees and lake areas. Birds come from as far as Siberia and Tibet to winter here and the storks, egrets, cormorants, geese, ducks, coots, ibises, snakebirds and other waterfowl are particularly numerous. Ornithologists from the Bombay Natural History Society meet our party and assist in bird identification. During the afternoon, following a picnic lunch, you explore Fatehpur Sikri, the rich 16th century city built by the great Moghul Akbar, 24 miles west of Agra, with its triumphal portal, Buland Darwaza, looming 134 feet over 34 feet of stairs. Here in the courtyard of the mosque, behind walls of marble lace, lies the tomb of the holy man Shaikh Salim Christi, under an elaborate canopy inlaid with mother-of-pearl. You stop frequently on the way back to Agra to photograph agricultural life. This evening our guests for dinner are the ornithologists from the Bombay Natural History Society.

Saturday, February 7

After an early morning re-visit to the Taj, you are driven to Delhi, with a stop along the way at the holy city of Mathura, believed to be the birthplace

of Lord Krishna, one of the incarnations of the god Vishnu. During the afternoon you visit the National Museum to see its sculptures and miniature paintings in the Persian style. This evening you attend the light and sound performance at the Red Fort which tells the dramatic history of that building and the events which occurred within its red sandstone walls.

Since the mid-30s, Dr. Robert Fleming has collected birds for Field Museum in India and Nepal. He holds a branch of scarlet-berried Nepalese holly, Ilex doniana.

Sunday, February 8

Today you fly to and return from Khajuraho, the city of thousand year old temples built by Chandella kings to honor both their Hindu and Jain gods and to immortalize their sensuous views of life itself. "Let the tourist be warned," comments *Fodor's Guide to India,* "some of the decorative sculpture on these temples is too revealing for the excessively innocent; too provoking for the prurient minded . . . Here is found the summit of Hindu sculpture—sinuous, twisting voluptuous."

Monday, February 9

After an early morning flight to the holy city of Benares, you take an afternoon tour of Sarnath, the deer park where the Buddha gave his first sermon, visit a museum, and see Buddhist stupas and temples and gardens. Your guide here and accompanying the tour from here on is Hari Karan Singh, a doctoral student in Tantric Hinduism at the Hindu University, who will lend the tour a new dimension of understanding of Indian and Himalayan religions. He will speak to the group during cocktails. You stay at Clark's Hotel.

Tuesday, February 10

You take an early morning boat ride on the Ganges past the bathing and burning ghats and watch young men perform the Hatha Yoga exercises, see holy men sitting in meditation or praying to the sacred river and view young and old as they immerse themselves in the holy waters. You also visit the inner city, walking its crowded, narrow alleys to the Golden Temple—the Viswanatha. You also see the modern Epic Temple with its animated figures telling of the life of the Lord Rama, the Durga or monkey temple, the Well of Knowledge and a silk factory. During the evening, you view a Kalhak dance—one of India's four classical dances and a form indigenous to the area.

Wednesday, February 11

A morning flight takes you to Kathmandu in Nepal and you catch your first breathtaking view of the Himalayas. After settling in the Hotel Annapurna, you take an orientation trip around the city, viewing Kathmandu from the heights of Swayambu Nath and visiting the Ministry of Foreign Affairs. You meet Dr. Robert Fleming, bird specialist and Field Associate of Field Museum, who has resided in Nepal and India since the thirties, who will accompany the tour during the eight days in Nepal.

Thursday, February 12

You visit shops in the Mahabodh section and view the pagodaed palaces and temples of the ancient Newar capital. The pagoda style of architecture is believed to have originated in Nepal. You are driven south of the city to the Royal Botanical Garden, founded a few years ago by King Mahendra, and to the collection of native orchids of the Rev. Saubolle, S.J., located nearby. You also go on a bird walk in a wooded area, visit a Tibetan rug weaving center and stop at the Royal Zoo to see rare red pandas, which are native to Nepal.

Friday, February 13

Travel is north of the city, to the highlands and to the Narain Temple, where sacred carp swim in large pools and are fed ceremonially. Nearby is one of the chain of dispensaries operated under leadership of Dr. Fleming and his wife, Bethel, a physician. During the afternoon you visit Nepal's second city, Bhatgoan, in the eastern portion of the Kathmandu Valley, where the Temple of the Five Stages is regarded as one of the most beautiful pagoda temples in the world. Its stairway is guarded by sculptured beasts and gods. It was built in 1700 by Raja Bhupatindra Malla.

Saturday, February 14

You fly to Tiger Tops, in Nepal's tropical lowland Terai. You are met near the field which serves as airport by elephants which carry you to your treetops rooms. The living areas are of bamboo and all colors used in decorations are those of the jungle. The use of kerosene lamps and absence of radios add to the total effect of sophisticated rustic. Tasty meals are served around a blazing fire in a central

building. During the afternoon you stalk rhinoceroses, wild pigs, monkeys and deer from a howdah on your elephant's back. During the evening you watch for tigers from the security of a blind.

Sunday, February 15

After an early morning bird walk, you again go out on the elephants. Evening supplies a second chance to see tigers.

Monday, February 16

You fly back to Kathmandu via the city of Pokhara, where you stop for the spectacular view of the Annapurna range, whose peaks rise sheerly to heights of more than 26,000 feet. After lunch you visit Pashupatinath Temple, one of Hinduism's holiest centers on the sacred Bagmati River, northeast of Kathmandu. Further east is the famous Buddhist stupa, Boddhnath, with its 108 prayer wheels, its brooding all-seeing eyes and golden umbrella. You are in time for a worship service at the nearby Tibetan lamasery temple where you meet some of the young, saffron-robed monks.

Tuesday, February 17

This morning you take a short flight to the area of Mount Everest. The afternoon is free for shopping and special tours.

Wednesday, February 18

A look at Nepalese agriculture is the highlight of this morning's ride out along the Chapagoan road to the villages of Chapagoan, Sonaguti and Techo, west of the city. There is a walk in the evergreen forest, Bajhara Bara, a great place for bird watching and interesting for its wild Hoya vines growing epiphytically on trees.

Today is Nepalese National Day and the afternoon is spent watching parades and Gurkha soldiers and seeing His Majesty King Mahendra and his gracious queen, Ratnarajyalakshmi. The king, believed to be a reincarnation of the god Vishnu, the Preserver, is of the Gurkha line, which conquered Kathmandu Valley from the Newar kings in 1768 under the leadership of Prithwi Narayan. King Mahendra's father, Tribhuvan, restored monarchal power in 1951 after much of it had been taken by a line of hereditary prime ministers of the Rana family.

During the evening, you attend a party at the hotel honoring the Flemings. Our guests will include 20 of the Flemings' Nepalese friends.

Thursday, February 19

You fly to Bhadrapur in the northeastern corner of Nepal, are met at the airport by jeeps which take you to the Brahmaputra River which you ford in bullock carts, and you are met on the Indian side by automobiles which take you on the winding mountain trip to Darjeeling. You stay at the Oberoi Mount Everest Hotel and tour this mountainside city during the afternoon. Views of the Kanchenjunga range are spectacular.

Friday, February 20

Tiger Hill is the best spot to view Mount Everest, so you make an early morning visit there, stopping along the way to investigate the forest of *Cryptomeria japonica* and at the Buddhist Monastery at Goom. During the afternoon you see a tea plantation and visit the Tibetan handicrafts center.

Saturday, February 21

You leave after breakfast by car for Gangtok in the Kingdom of Sikkim and spend the better part of the day viewing the temples and palaces.

Sunday, February 22

Darjeeling's famous botanical garden and a residential garden occupy the morning. The afternoon is free for visits to the market.

Monday, February 23

You drive from Darjeeling to Badogra in the lowlands, where you catch a plane to Delhi.

Tuesday, February 24

Your day is free in Delhi, with afternoon tea at the home of Mrs. Meera Sawhney, whose garden is exceptional and whose collection of Indian art works is extensive.

Wednesday, February 25

Free day in Delhi.

Thursday, February 26

You fly to London via Moscow. Your hotel is the Grosvenor House.

Friday, February 27

You fly to New York and Chicago.

Buddhist stupa stares thoughtfully out across the Valley of Kathmandu.

Museum detective Legge looks for clues to human interest stories in one of the many storerooms in his bailiwick.

SHADOWING A MUSEUM DETECTIVE

By Elizabeth Alanne
Field Museum Press

A headpiece for an Egyptian mummy, its gilt paint still intact, stares unblinkingly as it has for more than 2,000 years. Primitive masks take on a sinister appearance in the semi-darkness of a basement storeroom. A plaque, partially hidden by other artifacts, testifies that William Jones, Ph.D., was "assassinated March 29, 1909, while making ethnological investigations for Field Museum among the Ilongot of the Philippine Islands." These items and thousands more inhabit the hunting grounds of Christopher Legge, custodian of the Museum's anthropological collections. Here, in the Museum's storerooms and exhibition halls he not only tracks down the answers to mysteries, but the mysteries themselves.

He searches for unique aspects of artifacts, features that hold out the possibility of human interest stories. He finds quite a few. One such was a boar's mandible carrying on its side a note written in the elaborate script of another era—"Great Boar—captured at Ka...(remainder of word is illegible)—by Captain Cook, Year 1716."

Disinclined toward cursory examinations, Mr. Legge worried the problem in his customarily thorough manner. This might involve not only library research, but very likely weeks and months of letter writing to any part of the world where someone might have an answer to his questions. In the case of the inscription on the boar's mandible, he learned that Captain James Cook, the circumnavigator, had not yet been born in 1716 and that Captain Edward Cooke, a member of the privateering expedition that rescued Alexander Selkirk (the prototype of Robinson Crusoe) from his island prison, always spelled his name with an "e." This confirmed Mr. Legge's early assumption that the inscription was a hoax. Although probably written on the bone many years ago, it seems more likely that it was intended as an "amateur collector's item" rather than to commemorate a hunting coup by a British sea captain.

In another instance, Mr. Legge found a note regarding a Solomon Islands canoe prow figure. In its ears are bits of glass, purported by one source to have come from the spectacles of a luckless missionary who happened to be in those islands when strangers were considered fair

game, in the gastronomical sense. Mr. Legge has written to an Australian historian friend and to the Custodian of Manuscripts at the National Maritime Museum in Greenwich to see if, as he believes, this is also a false story.

Another group of artifacts interests him because they are fakes, produced by an Englishman named Little. Little dealt in antiquities and, a gifted craftsman himself, later began to copy some pieces and produced many outright fakes. He also had an unfortunate penchant for "improving" the original in design or form in some cases so that ultimately, they would be exposed. Little's Fakes, as they came to be known, were eventually sought after for *their* own peculiar qualities.

A stone sarcophagus, originally left to the Museum by the estate of Col. S. L. James in 1904, was once believed to have been Cleopatra's (January, 1969, BULLETIN). Mr. Legge pursued this rumor in a two-year round of letter writing to points in Europe, North Africa and the United States in order to determine the true history of the item. Its association with Cleopatra seems false, but its complete history remains clouded, a fact which is bothersome to Mr. Legge.

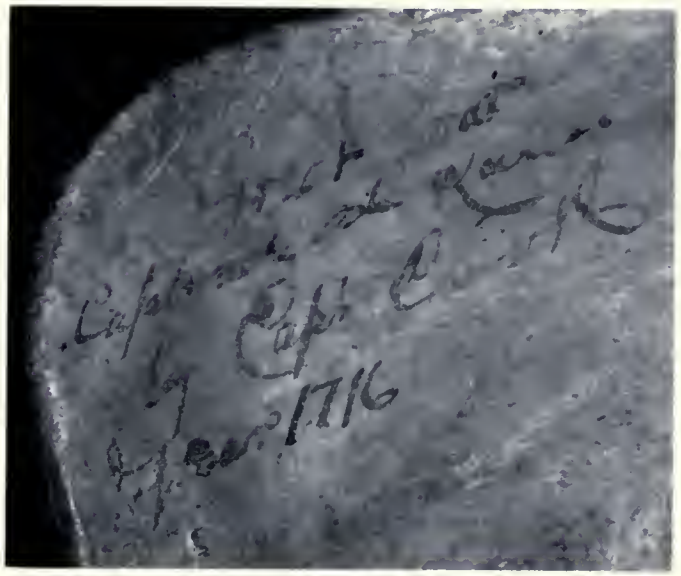
He is not disappointed if his investigations explode romantic myths about an item, but he does hope his studies will produce a satisfactory conclusion.

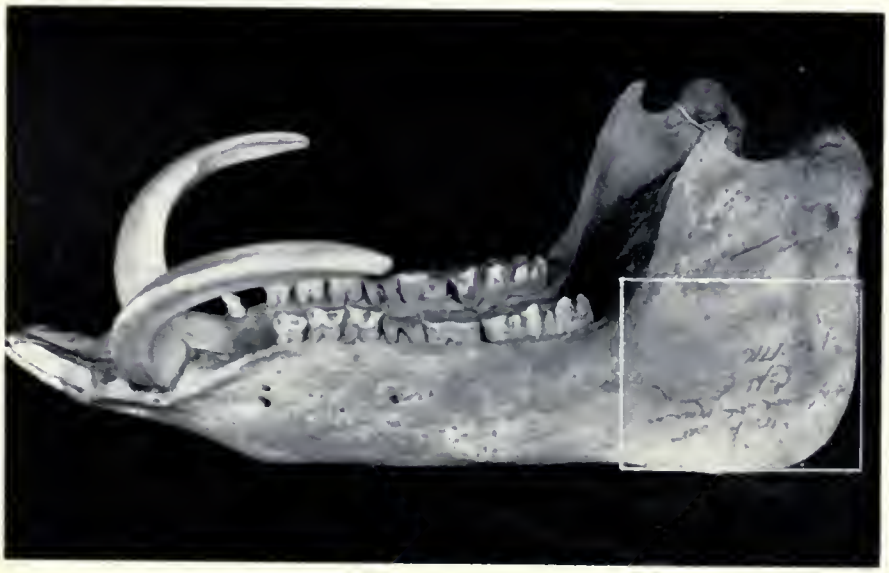
His detective instincts did not suddenly emerge full-blown when he began working at the Museum five years ago. A native of Great Britain, he served seven years in Nigeria as an Assistant District Officer and was a District Commissioner in the Fiji Islands for 23 years. There he developed an interest in characters connected with the romantic period in the South Seas. Information he obtained about a beachcomber—soldier of fortune who traveled under several aliases, "Cannibal Jack"—William Diaper—John Jackson, was published in *The Journal of Pacific History* in 1966. His authorship of "Old Cannon of Fiji and Rotuma" led to his receiving a "Doctor of Cannon Hunting" degree from CHAOS, Cannon Hunters Association of Seattle, in 1962.

Befitting his educational background in history at Cambridge University, where he once studied the American Civil War, he is now digging up information about one James T. Proctor. This nephew of Confederate General Beauregard was a man much embittered by the defeat of the Confederacy. He became a cotton grower, then switched to the role of "Blackbirder" in the South Sea Island labor trade, which often involved the kidnapping of natives.

While serving in Fiji, Mr. Legge met and married an Illinoisan and they moved here after his retirement from British Government service.

As he guides you through some of the Anthropology Department's many storerooms (there are 30 in all), he will tell you his job is not particularly difficult. "You simply have to know where everything is," he said. He glosses over the fact that this involves about a quarter





Boar's mandible (left) bore an inscription (above) which implied the object was connected with a well-known British sea captain. Mr. Legge did considerable research on the possibility and found that it could not have been related to either of the two most notable Captains Cook. The famous circumnavigator was yet unborn in 1716 and the other, who participated in the rescue of the prototype of Robinson Crusoe, spelled his name with an "e." The handwriting style, however, indicates the writing was done many years ago.

At the right is a "Little Fake," a copy of a Maori flute carved in wood with stylized faces and haliotis shell inlays. The ends are bound with cane wrappings. Only a minute inconsistency makes this spurious item identifiable as a fake. The less elaborate flute on the left is genuine. It features a relief carving of a face and carving on the mouth, which serves as an opening.

of a million ethnological and archaeological artifacts. Items from each geographical area are stored in a specific place where they are further arranged by type.

The items in these many collections range from Tibetan religious statuary to gaudy feather capes from the Hawaiian Islands. As one follows Mr. Legge from one storeroom to another, he finds evidence of scientific forays from Cape Horn to Alaska and from the Rift Valley to Melanesia. The sheer number of artifacts is quite staggering, as is the variety. And should a student or scientist ask to see some specific items, Mr. Legge will be able to take him to those items with little hesitation.

"It was a little tough for the first two years but it's not nearly as exciting as it once was. I used to always be running into little surprises, but now I know just about where everything is," he said. One of the "little surprises" popped up a few years ago when Mr. Legge was called upon to conduct a "little expedition within the building." In a remote storage area, a forgotten cache of Egyptian stelae had been rediscovered and had to be moved to proper quarters in the Anthropology Department.

In some cases artifacts may be stored for years without being touched. It is also in Mr. Legge's sphere of activity to assist the Conservator and Restorer in maintaining them. On one occasion the Museum received a whopping cleaning bill for restoring the freshness to 100 fragile costumes.

One morning recently, Mr. Legge came down a third floor corridor carting an object the size of a large pizza under his arm. Unsheathing it from a fabric bag, he said, "Look here, what do you think of this? It's a Crow Indian medicine shield." It was also a round mirror, festooned with owl feathers, which read, "Rubel Bros. and Co. — Premier Rye Whiskey — Chicago." "There should be an interesting story behind this," he said.

No matter how often he goes through the storerooms and halls, it seems certain he will continue to find "little surprises" concerning the personal side of the items in the collections. You just can't keep a born detective down.

Decorations in the earlobes of this Solomon Islands canoe prow figure are purported to be lenses from the spectacles of a missionary who fell victim to cannibal natives. Mr. Legge doubts this story and is trying to track down some facts about it.

Fawcett Named To Head Library

W. Peyton Fawcett, Associate Librarian at Field Museum for the past five years, has been appointed the new Head Librarian.

In his new position, Mr. Fawcett has two major concerns. One of these is the completion of the reclassification of all library materials, periodicals as well as books. This is presently about 80 per cent completed and Mr. Fawcett expects the process to be finished in a year or two. The acquisition of new material is another important area of concern, he said, explaining that the growth of activity in the area of exchange materials is particularly notable.

Mr. Fawcett's career with the Field Museum Library began in 1956, when he worked here while a student at Antioch College. He returned to join the library as a full-time cataloger in 1957 and has been here continuously except for two years of service in the army.

Ozark Geology Trip in April

A Geology Trip to the Ozarks will again be sponsored this year by Field Museum, in cooperation with the University of Chicago, April 6-12. A wide variety of geological phenomena will be studied in the field and fossils and minerals will be collected in the mines and quarries. The trip will include four long hikes, for which hiking clothes will be required.

This unusual fossil brachiopod was collected in the area to be visited on the Ozark GeologyTrip.

The Ozark region is a diversified geological area consisting of igneous and sedimentary rocks. The oldest igneous rocks, once molten, are at least one billion years old. The area was undersea many times and sediments, predominantly limey, were deposited into it. Other geological processes produced deposits of mineable ores, particularly lead and iron.

The group will depart by bus for St. Louis on Sunday, April 6. The return to Chicago is scheduled for Saturday evening, April 12. Tuition, including all transportation and hotel accommodations, is $95. There will be an added charge for those wishing private accommodations.

Dr. Matthew H. Nitecki, Assistant Curator, Fossil Invertebrates, will conduct the trip. For further information and application forms, contact Miss Barbara O'Connor, University of Chicago Downtown Center, FI 6-8300.

CALENDAR OF EVENTS

February hours: 9 a.m. to 4 p.m., Monday through Friday; 9 a.m. to 5 p.m., weekends and on Lincoln's Birthday, February 12.

February 1–24 24TH INTERNATIONAL EXHIBITION OF NATURE PHOTOGRAPHY Sponsored by the Nature Camera Club of Chicago, prize-winning color and black-and-white prints will be displayed in Hall 9 Gallery. Award winning slides will be shown at 2:30 p.m. in the James Simpson Theatre on February 2 and 9.

February 2 "Earth, Life and Man" Lecture Series continues with "COLLECTING FOSSILS AS A MUSEUM ACTIVITY," by Dr. Everett C. Olsen, Research Associate, Fossil Vertebrates. The series of lectures by Museum Curators is a feature of the Museum's observance of its 75th Anniversary. 2:30 p.m. in the Lecture Hall.

February 9 "Earth, Life and Man" Lecture Series "CHANGING FAUNA OF THE GREAT LAKES," by Loren P. Woods, Curator, Fishes, will be presented at 2:30 p.m. in the Lecture Hall.

February 16 "Earth, Life and Man" Lecture Series "A WEALTH OF BIOLOGICAL DIVERSITY: THE PLANTS OF COSTA RICA," by Dr. William C. Burger, Assistant Curator, Vascular Plants, will be presented at 2:30 p.m. in the Lecture Hall.

February 23 "Earth, Life and Man" Lecture Series "INHERIT THE WHIRLWIND," which explores the effect of weather on the earth, will be presented by Dr. John Clark, Associate Curator, Petrology. 2:30 p.m. in the James Simpson Theatre.

Through February Winter Journey: "ANCIENT SEA MONSTERS" Free do-it-yourself tour introduces boys and girls to the marine world of prehistoric times. Any child who can read and write may participate in the Journey Programs sponsored by the Raymond Foundation. Free Journey Sheets are available at the Museum entrances.

MEETINGS:

NATURE CAMERA CLUB OF CHICAGO, February 11, 7:45 p.m.
CHICAGO MOUNTAINEERING CLUB, February 13, 8 p.m.
ILLINOIS ORCHID SOCIETY, February 16, 2 p.m.
ILLINOIS CHAPTER OF THE AMERICAN FISHERIES SOCIETY, February 17–19.
GREAT LAKES CHAPTER OF THE SIERRA CLUB, February 18, 7:30 p.m.

FIELD MUSEUM
OF NATURAL HISTORY
ROOSEVELT ROAD AT LAKE SHORE DRIVE
CHICAGO, ILLINOIS 60605 A.C. 312, 922-9410
FOUNDED BY MARSHALL FIELD, 1893
E. Leland Webber, Director
BULLETIN
Edward G. Nash, Managing Editor

PRINTED BY FIELD MUSEUM PRESS

Field Museum's 29-day Tour of Himalayan Kingdoms and Northeastern India is limited to nine elephant loads (36 persons). The $2,657 price includes a $500 tax-deductible donation to Field Museum and all transportation, meals, taxes and fees—but not *baksheesh*. The Tour is slow paced to assure full coverage of all the many dimensions of the area. While emphasizing archaeology and natural history, it also covers the tourist attractions. The personal dimension is stressed, too, with visits to private homes and gardens and with opportunities to meet Indian and Nepalese specialists in birds, religions and history. Phil Clark, the Tour Leader, will also serve as Tour Botanist. Dr. Robert Fleming, a Field Associate of Field Museum, in Nepal, will accompany the group during the Nepal leg of the trip. Hari Karan Singh, a specialist in Tantric Hinduism, will accompany the group through half the tour.

T. K. Bapna, a guide in Jaipur, demonstrates India's most exotic mode of transportation.

THE HIMALAYAN KINGDOMS AND NORTHEASTERN INDIA
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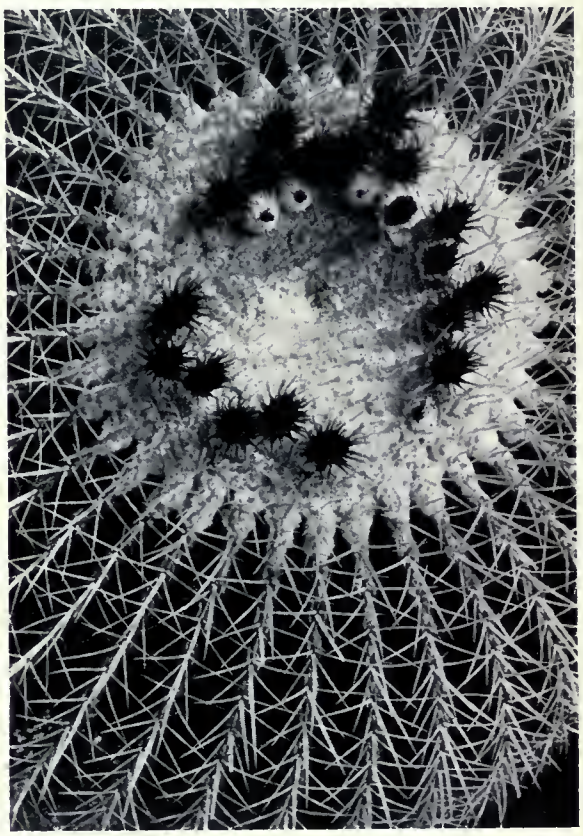
Volume 40, Number 3 March 1969

BULLETIN FIELD MUSEUM OF NATURAL HISTORY

HIPPO
ROBERT RIEMER, CHICAGO, ILL.

TWO HUNDRED MILLION YEARS OF DISAPPROVAL ARE WRITTEN ON THE FACE OF THIS MONTH'S COVER SUBJECT, A GALAPAGOS ISLANDS TORTOISE. TURTLES WORKED THINGS OUT ABOUT THAT LONG AGO, AND ALL THIS SO-CALLED PROGRESS—BIRDS, MAMMALS, MEN, AND NOW MACHINES—MUST SEEM FRIVOLOUS. THE PHOTO, WHICH WON AN HONORABLE MENTION IN THE EXHIBIT, IS BY GRANT HAIST, ROCHESTER, NEW YORK.



CACTUS BLOSSOM—PSA MEDAL/BEST OF SHOW
CAROLE HONIGSFELD, ENCINO, CALIF.

WILD CYCLAMEN—
WALGREEN SILVER BOWL/
BEST COLOR PRINT
WILLIAM J. TRIBELHORN
ROCHESTER, N. Y.

...from the 24th Chicago International Exhibition of Nature Photography February 1969

sponsored by the Nature Camera Club of Chicago and Field Museum

SPLIT AGAVE—NCC SILVER MEDAL/
BEST PLANT
T. V. WHITEHOUSE, SAN DIEGO, CALIF.

SAND MOUNTAIN
ALEXANDER DUPPER, LODI, CALIF.

TIMBERLINE—HONORABLE MENTION
TED FARRINGTON, CHICAGO, ILL.

MANDRILL—NCC SILVER MEDAL/
BEST ANIMAL
EARL KUBIS, DOWNERS GROVE, ILL.

LION FAMILY WITH KILL LUDI BLUM, JOHANNESBURG, SOUTH AFRICA

FOG
RUSSELL K. KOMEN, WARSAW, IND.

DESERT DELIGHT
JOSEPHINE D'ANGELO, CHICAGO, ILL.

NEARLY 800 NATURE PHOTOGRAPHERS FROM 46 STATES, CANADA AND EIGHT FOREIGN COUNTRIES ENTERED THE 24TH CHICAGO INTERNATIONAL NATURE PHOTOGRAPHY EXHIBITION THIS YEAR. AWARDS WERE GIVEN FOR THE BEST ANIMAL, PLANT AND GENERAL ENTRIES IN THREE DIVISIONS—COLOR SLIDES, COLOR PRINTS AND BLACK-AND-WHITE PRINTS. SPECIAL AWARDS INCLUDED THE PHOTOGRAPHIC SOCIETY OF AMERICA AWARDS FOR BEST OF SHOW AND THE BEST AUTHENTICATED WILDLIFE PRINT AND SLIDE, THE MYRTLE WALGREEN SILVER BOWL FOR THE BEST COLOR PRINT AND THE ALICE COOK MEMORIAL AWARD FOR COLOR HARMONY.

THE EAGLE SPEAKS
LELAND LA FRANCE, CHICAGO, ILL.

ZEBRAS AT WATERHOLE
W. ROSSINI, JOHANNESBURG, SOUTH AFRICA

Fourth Year for Anthropology Course

For three years, the Raymond Foundation of Field Museum has conducted a pioneering Summer Science Training Program in Anthropology. The Program, supported by National Science Foundation, is designed for high ability secondary school students, and combines lectures, discussion groups, workshops and field work into an excellent six-week survey of the broad range of Anthropology.

This coming summer, the course will feature eminent anthropologists from local colleges and universities, who will work with students on such subjects as Fossil Man, Ancient Civilizations, African Ethnology, and Chicago's Ethnic Communities. The program is conducted by Harriet Smith, Raymond Foundation Staff Lecturer in Archaeology and Edith Fleming, Staff Lecturer in Ethnology. The fifth week of the program will be a continuation of an excavation program begun last summer at a local Indian site. Patrick and Cheryl Munson, who supervised the dig last year, are returning to finish the work.

The Palos site lies in a Cook County Forest Preserve. It was discovered some years ago by Mr. David J. Wenner, Jr., a local amateur archaeologist. The generous cooperation and help of the Forest Preserve personnel, particularly Roland Eisenbeis, Superintendent of the Department of Conservation, and Edward Lace, Forest Preserve Naturalist, were invaluable to the success of the dig.

Mrs. Munson (left) discusses pottery found in one of the pits with students Robbie Little and Chris Carr.

from The Palos Site:

An Early Historic Indian Village near Chicago

a site report by Cheryl Ann Munson and Patrick J. Munson
University of Illinois, Urbana

The Munsons, fresh from a year of digging in Africa, arrived in Chicago last year just in time to conduct a week long dig with the students of Field Museum's Summer Anthropology Program. The BULLETIN presents here the conclusion of their detailed and interesting site report on a small Indian village apparently occupied at the time of first European contact in the Chicago area, 150 years before the city began.

In addition to the aboriginal artifacts and features, large quantities of animal remains were recovered during the excavations. Most numerous were bones of deer and fish, although remains of crayfish, a few fresh water mussels, and some as-of-yet unidentified birds, turtles, and smaller mammals were also recovered. These remains indicate that much of the economy was oriented toward deer hunting and fishing.

Only two fragments of hazel nut shells and a common bean were found during actual excavation. Other plant remains were recovered however by subjecting the soil found in the pits to a flotation process. The soil was placed in a sieve and submerged in water causing the dirt and rocks to sink and the carbonized plant materials to float. Materials recovered in this manner were submitted to Mr. Leonard W. Blake of the Missouri Botanical Garden who identified among them five small fragments of corncobs, one corn kernel, several sedge seeds, and a few seeds of either lamb's quarter or pigweed. The corn and bean of course indicate that these people were agricultural, but the nut shells and lamb's quarter or pigweed seeds, all of which are wild food plants, indicate that some gathering was also practiced.

The plant and animal remains not only give some indication of the economic behavior of the people, they also suggest the season of occupation. Fish and mussels, and particularly crayfish, would have been available essentially only between spring and fall. However, the male deer skulls which were recovered all had their antlers attached, and since deer shed their antlers in late winter and do not develop a new set until late summer this would suggest that they must have been killed between late summer and late winter. But the relative scarcity of nuts from the site would argue against a fall-winter occupancy. Consequently, late summer would seem to be the primary period when the Palos Site was occupied. The inhabitants of the site probably had a seasonally diversified economy, moving to other sites for fall, winter and spring activities such as nut gathering, hunting of certain animals, trapping and maple syrup making.

Mr. Munson (right) maps the site, while students excavate and screen.

As previously mentioned, perhaps the most interesting aspect of the excavations was the discovery of several items of European manufacture deep within three pits in direct association with aboriginal artifacts. These items include a fragment of a brass or copper tinkler, two fragments of sheet brass (kettle fragments?), a fragment of a brass ring or other ornament made by folding in the edges of a strip of brass so that a B-shaped cross-section results, and a larger, thicker brass object of the same construction. The latter two items are similar to the "double wire" spring coil ear or hair ornaments which were found at the early historic Zimmerman Site near Starved Rock. Also found at the bottom of an aboriginal pit was a heavily corroded iron object containing wood in the rust. This might possibly be a clasp knife.

The presence of these European trade goods in association with artifacts of aboriginal manufacture indicates that the Blue Island Culture lasted into the early historic period and that the inhabitants of the Palos Site were trading either directly with Europeans or with other Indians who had acquired these materials from Europeans. The site seems therefore to have been occupied at, just after, or slightly before the first European contact, which in this area occurred in 1673 when Father Jacques Marquette and Louis Jolliet traveled up the Illinois and Des Plaines rivers and portaged to the Chicago River and Lake Michigan. But the absence of glass beads at the site, which were being traded into northern Illinois by 1693, suggests that the site was occupied for no more than 20 years after the first period of contact.

Students excavating storage pit and screening its contents.

The tribal identity of groups which are known only archaeologically is often a difficult problem. When the Blue Island Culture was known only from prehistoric sites, some archaeologists, on the basis of the similarity of its pottery to pottery in Wisconsin which had been identified as prehistoric Winnebago, had very reasonably concluded that the Blue Island Culture sites in the Chicago region represented encampments of Winnebago groups several hundred miles to the south of the area they were occupying at the period of first European contact. However, one of our colleagues, Mr. Charles H. Faulkner, who has recently been working with similar remains in northeastern Indiana, has suggested to us that the Blue Island Culture might represent the Miami tribe. Since the excavations of the Palos Site have demonstrated that the Blue Island peoples were living in the area at the beginning of the historic period, and since the early historical records do not mention Winnebago villages in the area but do note many Miami villages, we find Mr. Faulkner's suggestion most reasonable.

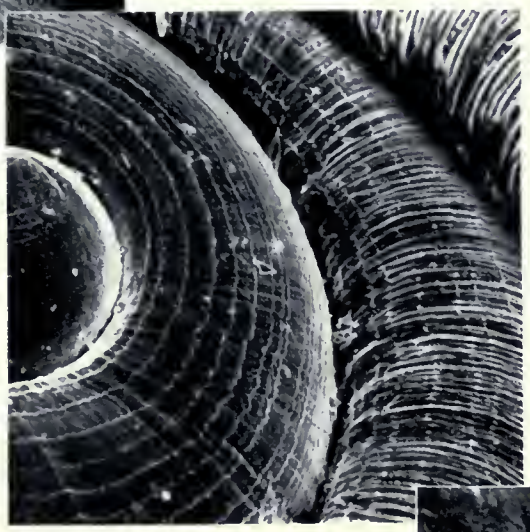
To summarize, we have interpreted the Palos Site as representing a Miami camp occupied during the late summer months between 1673 and 1693. During this part of the year the people subsided by hunting deer and smaller animals, by fishing, and by collecting some mussels and crayfish. They may have grown corn and beans near the site or possibly they brought to the site part of their harvest from fields elsewhere. Other plant foods, apparently in limited quantities, were obtained by collecting nuts and other wild seeds. Food was cooked and stored in pits dug into the ground. The people had a varied tool kit including stone and antler points for bow-and-arrow hunting, stone knives and scrapers for butchering game and preparing hides, milling and hammerstones for cracking and grinding nuts and seeds, and bone awls for sewing and weaving. Well-made pottery vessels were used for cooking and storage. Unfortunately no knowledge of their house types or burial practices was gained from this season's investigations, but it is anticipated that this deficiency will be rectified by additional research at this site.

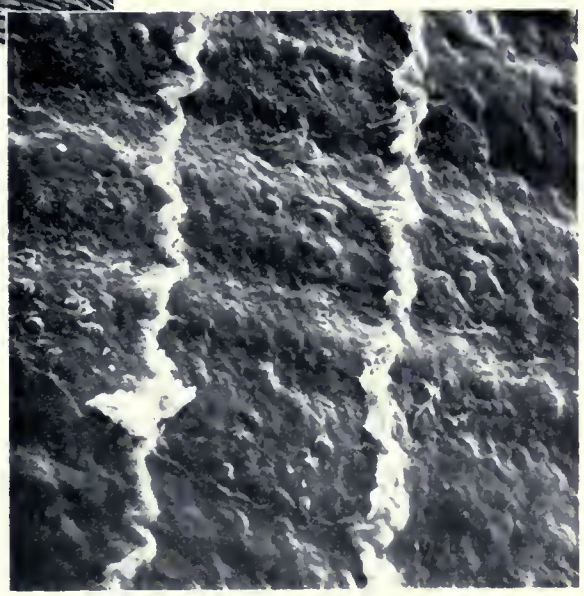
The early explorers rarely recorded detailed information on the life ways of the Indians they encountered, but through archaeology we can recover much of this missing information. By reconstructing the cultural patterns manifested at the Palos and other Blue Island Culture sites we have gained a general knowledge of the life ways of the Indians who inhabited the Chicago region from A.D. 1300 to early historic times. In addition, the students who participated in the program have learned how archaeological excavations are conducted and they have participated in determining who the occupants of the Palos Site were, what kind of culture they had, and when they lived at the site. But perhaps most important, by answering these questions the students have discovered what can be learned through archaeology. During the summer of 1969, students in the next Summer Science Training Program in Anthropology will return to the Palos Site and continue this exciting endeavor.

The scanning electron microscope fills the gap between the optical and the electron microscopes, revealing an exciting and beautiful world to the author.

. . . *in his dim, uncertain sight*

By Alan Solem
Curator, Lower Invertebrates





Over the years I have become reconciled to the relevant absurdities that enter my mind unbidden during moments of intense scientific thought. Hence the sudden eruption of Nicholas Butler's definition of an expert as "one who knows more and more about less and less," was hardly surprising. I was seated on the edge of a typist's chair in a darkened room, peering intensely at a small television screen on which there were appearing in sharply outlined detail, structures that I had been seeking, without success, to view for more than six years. This was during my first visit to Alpha Research and Development Company of Blue Island, Illinois, and my first opportunity to make use of its scanning electron microscope.

Earlier that afternoon, Mr. John Brown of Alpha Research had placed several minute snail shells in a vacuum chamber, coated them with about a 400-Angstrom Unit layer of pure gold, then transferred the gilded group into the scanning electron microscope specimen chamber. A sequence of flashing lights and moving dials traced the

Top photo shows the actual size of the tiny Palau shell, the white dot in the center of the black background area. Working down the page: The Palau shell magnified about 75X, then 200X, and finally, slightly over 2000X. The original photographs show slightly higher magnifications, but space limitations in the Bulletin made it necessary to reduce them here.

reduction of air pressure within the chamber. After a few minutes a buzzer signalled that operations could begin. By bombarding the gold film on the snail's surface with a 20-KV stream of electrons, it was possible to produce a highly magnified image on a viewing screen. Sure twists of positioning knobs by John Brown, slight changes in specimen angle, adjustments of the focusing and contrast knobs, and there, for the first time, I could see without question the true sculptural structures of endodontid land snails. Simple clicks of a magnification control, and suddenly magnification of the same spot could be changed from 50X to 10,000X.

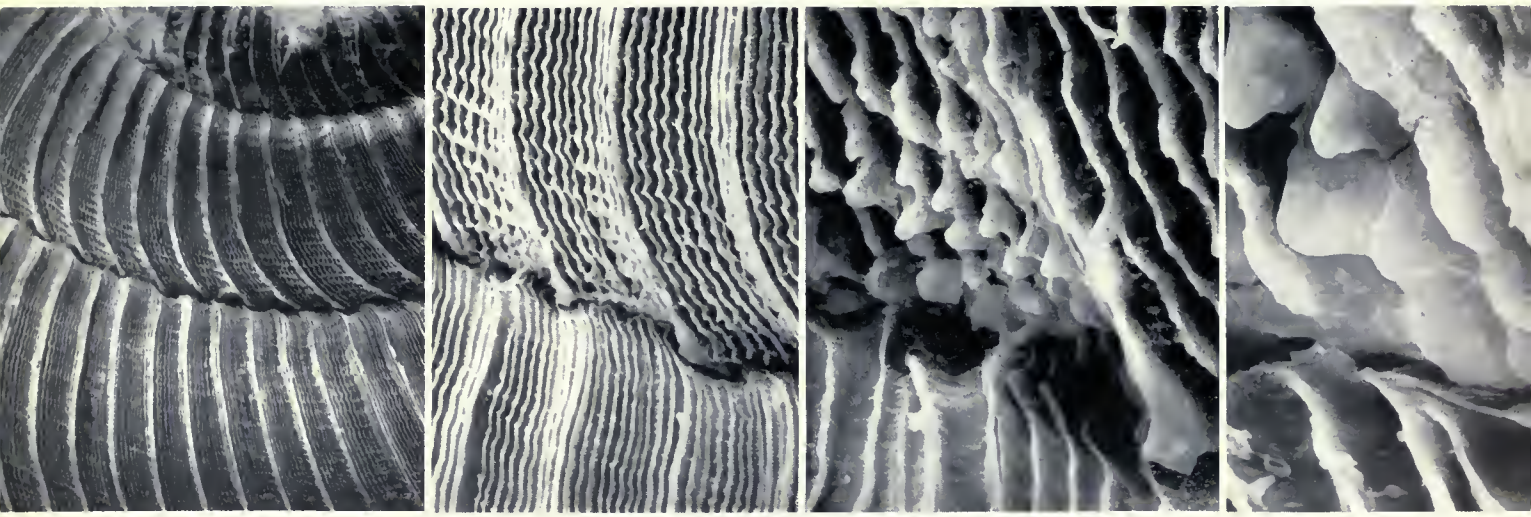
Few things please a scientist more than being able to confirm a pet prejudice. That afternoon was filled with pleasures. In three hours I answered questions that it had taken six years of work with the light microscope to ask, and, in asking, to know that I could not answer them. The answers to those questions lay at or beyond the resolution limit of the light microscope. Combining the microscope's shallow depth of field, a globular shell with marked surface relief, and never enough light on the shell, hid the answers that I sought behind a blurred fog.

Scientific progress is intimately connected with the continual development of new tools that extend man's feeble senses. Decades of careful and patient labors by many individuals will come up against a wall beyond which our tools will not reach.

Since the mid-1660's, generations of scientists have utilized the optical microscope in studying the form and fine structure of living organisms. Between the range of the standard light microscope and the extremely high magnifications of the standard electron microscope, there was a visual gap. This has been bridged only by the recent production of an effective scanning electron microscope.

The superiority of this instrument lies not primarily in the greater magnification of which it is capable, but in the infinitely greater depth of field that it produces at any given magnification. I have seen estimates indicating that the scanning electron microscope has 300-500 times the depth of field obtainable with the best optical equipment. The illustrations produced here amply demonstrate the high magnification and resolving power of this instrument.

With this tool I could examine structures on the surface of snail shells with magnification as high as 10,000X. By taking a photograph at a particular magnification, rotating the specimen only two or three degrees and taking a second picture, I can obtain a stereo pair for viewing, and thus achieve a three-dimensional portrait of these structures.



This relative "giant" among entodontid land snails measures about 1/6 of an inch in life. This series shows the shell (from left) *at about 60 × magnification, 180 × magnification, 600 × magnification, and 1800× magnification.*

Why? What is the importance of the results?

Why did I ask the previously unanswered questions?

For the past several years I have been studying the endodontid land snails of Polynesia and Micronesia. These are quite small, one to five millimeters in adult size, land snails that are generally restricted to the leaf litter in undisturbed forests on the high volcanic islands of the Pacific Basin. After studying almost 30,000 specimens I have recognized about 280 different species, the majority of which had not been previously described. My primary concern is not the comparatively simple matter of telling species apart, but in trying to learn what are the relationships between species and what has been the pattern and pathways of evolutionary change within the group. My studies have not consisted solely of observing the shells, but have included dissection of the soft parts wherever possible.

Early in the study it became evident that there are two major taxonomic groups present on the Pacific Islands. Anatomical differences are numerous, discrete and easily observable from even fragmentary preserved specimens.

Many species have become extinct within the last 100 years and several specimens have been recovered from the deep core drilling on Bikini, Eniwetok and Funafuti

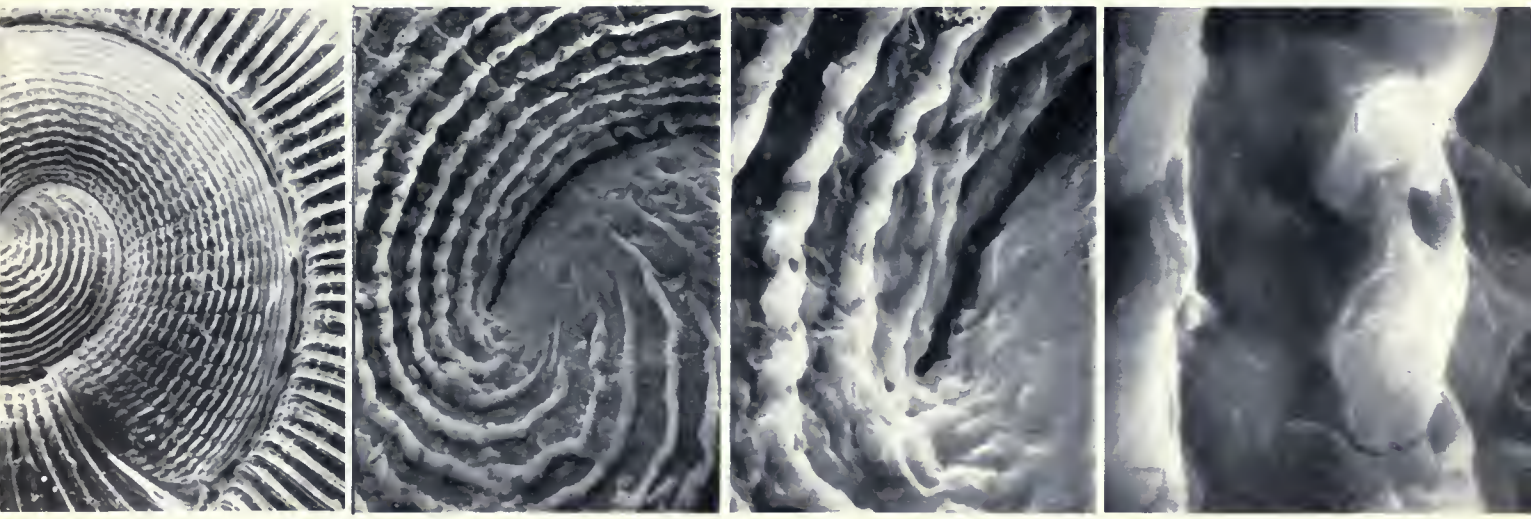
atolls. The specimens from the cores range in age from comparatively recent to perhaps 20 million years old. It would be most helpful in determining patterns of colonization to relate these shells to modern species. Obviously they could not be dissected. Hence, a major concern of mine has been to learn if there are any shell features which serve to distinguish sub-family groupings that are based on anatomical differences. For a long time, this search appeared unsuccessful. Almost any shell feature that was found in members of one sub-family, was duplicated one or more times in specimens of the other sub-family. While certain average groups of characters seemed, in most cases, to distinguish between the different groups, I was unable to pick any shell features that could be used, without question, to differentiate the subfamilies.

The nearest I had come to a solution was an indication that there might be some differences in the very fine sculpture on the shell surface. With a few exceptions, the sculpture on the apex seemed to correlate with the anatomical structure. These features were at the limit of resolution for the light microscope. I never could be certain whether I was seeing or merely wishing to see.

Two sessions with the scanning electron microscope produced results beyond my wildest expectations. Clear shell differences exist in the shell microsculpture. The technical report and conclusions will appear elsewhere, but here we can appreciate these shells for their beauty.

We have chosen to show you a full series of pictures for a Palau Island species whose largest dimension is $\frac{1}{12}$th of an inch (see actual size picture), details from the center sculpture of a Fijian species whose maximum size is less than $\frac{1}{25}$th of an inch, and details of a "giant" that reaches almost $\frac{1}{6}$th of an inch. Depth of field limitations made 100X magnification an effective limit for examining these with the light microscope. Obviously, at 100X magnification sculptural details of the Palau shell are scarcely visible. One can see that the sculpture of the first few whorls is different from that on the remaining whorls, but it isn't possible to make out details. Only at the much higher magnification and particularly at the 1,000 and 3,000 magnification level is it possible to see clearly what are the structural elements of the sculpture. Greater differences are demonstrated in the very small Fijian shell, with the apex having strands arranged in spiral rows and resembling some very peculiar cake decoration or strings of pasta. What seems at first to be a rather simple and crowded sculpture of the Austral Island species at higher magnification turns out to be an incredibly complex series of jagged-edged swirls and dips.

The actual size of this entire shell is only 1/25 of an inch at its widest dimension. With the scanning electron microscope, the exquisite details of its shell surface have been revealed. From left, *180× magnification, 600× magnification, 1800× magnification, and 6600× magnification.*



My first question, concerning whether there were any shell features to separate the sub-family groupings, was answered in the affirmative. A more fundamental question was raised. What possibly could be the function of such complex ornamentation on the surface of very small snails? While we have no certain answer, ideas produced by these pictures will lead me back to the scanning electron microscope and its operator, John Brown. More specimens, more pictures, more ideas, a new area of research opened, since what was "in his dim, uncertain sight" is clearly seen by electrons. They are far superior to both bifocals and binocular microscopes.

The largest known specimen of *Cypraea pulchra* (Beautiful Cowry), three inches in length, will be the featured exhibit during the Fifth Annual Shell Show of the Chicago Shell Club at Field Museum in March. "Shapes and Patterns of Shells" is the focal point of the show which will display larger specimens of beautiful and unusual shells from all parts of the world. About 90 per cent of the known mollusks, however, are very small, measuring ½ inch or less in size. These, too, come in a marvelous array of shapes and patterns as demonstrated in Dr. Solem's article about some of the tiniest shells known.

THE POTATO

A very short history of a very valuable plant

by Edward G. Nash
Managing Editor

When, in 1962, Robert Akeley of the Department of Agriculture wrote that an almost perfect diet, in terms of daily nutrient allowances, would be five pounds of boiled potatoes and a quart of milk, I, for one, detected not a ripple of public comment. That the potato and the cow might well be considered man's best friends went almost completely unnoticed. When Akeley went on to say that 11 pounds of potatoes would have to be eaten, to gain an excess of one pound of body fat, compared to four pounds of round beef, the silence was almost deafening. And still today, when the people of this weight-watching land start thinking "diet," one of the first items to go is the innocent (relatively) potato.

Admirers of the plant should not be surprised by this; the potato has had a difficult time of it in its short history as a food plant of worldwide importance. More than 30 years ago, Berthold Laufer, then Chief Curator of Anthropology at Field Museum, wrote of *Solanum tuberosum*, "First misjudged, despised, and ostracized in Europe—even persecuted on account of its nightshade affinities and maliciously slandered for its alleged poisonous properties—the potato remained for a long time the sustenance of the poor only."

Botanically, the plant is a member of the family Solanaceae, the Nightshade family. The very large genus *Solanum*, 2,000 or so species, contains the eggplant as well as the potato, and is so closely related to the tomato, *Lycopersicon*, that some botanists believe the two genera should be combined. The family contains, as well, the red pepper, belladonna, henbane, the Jimson weed, tobacco and the petunia, as varied a lot as might be found in a large human family. After the grasses and the legumes, Solanaceae is probably the most important plant family to Man. But the potato's relationship to some very deadly plants may well have slowed its spread. A European who understood very well the political usefulness of, say, belladonna, might be unwilling to test the nutritional value of its kin.

The first Europeans known to have eaten potatoes were members of a small Spanish scouting party in what is now the Republic of Colombia. Early in 1537, the expedition of Gonzalo Jiménez de Quesada was struggling through the dense forest of the Magdalena Valley. A small patrol worked its way up onto the plateau to the east and entered the Indian village of Sorocota. The natives fled and, searching the houses, the Spaniards found maize, beans and "truffles" that were a "dainty dish even for Spaniards." He had eaten, of course, a potato.

The plant had been cultivated in South America for many centuries; more than any other crop, it enabled the Peruvian Indian to survive on the high, cold, barren Andean plateau. The Indians had even developed a freeze-dry technique for preserving the tubers the year round. In this form, *chuno*, it is still a staple food in the Andes.

The Spanish, as they developed their enormous colonial empire in the New World, were quick to see the value of the potato as food for the Indians. Fortunes were made transporting *chuno* to the great forced labor mines of Peru and Bolivia. The gold and silver of the Spanish treasure ships were dug with the energy supplied by *Solanum*. The very importance of this food to the Indian cheapened it in the eyes of the conquerors, and the Spanish never understood that the plant itself was worth far more than all the precious metals they sought.

By 1570 or so, *Solanum tuberosum* had reached Spain, probably as an ornamental plant, or in some ship's stores. It was little grown. It turns up in Italy a little later and the great herbalists began to study it. How it reached England is not clear, but the tradition is that Sir Walter Raleigh imported it. This could well be true; he was deeply interested in agriculture. Raleigh may also have introduced it into Ireland.

In continental Europe, the plant spread slowly. It took a royal decree, during a famine after the Seven Years' War (1763) to bring the plant into cultivation in Prussia. In Sweden similarly, the government had to insist on its use. In western Europe, the Industrial Revolution, which required large non-farming populations, sparked the spread of the plant. In the east, population pressure helped. The potato, under ideal conditions, will produce more pounds of food per acre than almost any other staple—five times as much as rice and ten times the yield of wheat per acre, on average.

But in no country did the food become more important—to the exclusion of almost every other crop—than in Ireland. By the 1840s, the Irish had been growing the crop for more than two hundred years. They were absolutely dependent on it. When the fungus *Phytophthora infestans* blighted the potato crops of Europe in the middle forties, Ireland was laid waste. By the close of the decade, the population of that unhappy island had declined by 2½ million people. Many, a million perhaps, emigrated to Canada and the United States; the others died. Those who fled the Famine, and their descendants, have made enormous contributions to this country.

In America, potato consumption has been declining, due, to some extent, to the prejudice of the weight-watchers. We use slightly over 100 pounds a year per capita. In France, Germany, and Central Europe the use is four times as great. Still, as Richard Bissell implies in the subtitle to his recent book "How Many Miles to Galena?", it is nearly impossible to go to an American restaurant without having to answer the universal question "Baked, hashed brown or French fried?"

Links to the Past

By Patricia M. Williams
Field Museum Press

This necklace indicates the antiquity of bold jewelry designs employing chains. It is made of three Roman gold coins set in circular double gold frames, forming three pendants on an ornamental chain.

WOMEN the world over are in chains—not because they are in bondage, but because they are in fashion. Giorgio di Sant' Angelo, a currently popular New York designer, has made a great success by wrapping his clients in 85-foot lengths of gold chain and recently appeared at the Metropolitan Museum with 34 gold chain necklaces hanging around his neck. There are chains for belts, necklaces, headbans, bracelets and anklets. The *Chicago Tribune* predicts, "1969 should be the year of the big boom for jewelers, catering as they will be to the suddenly insatiable appetite on the part of both men and women for jeweled baubles, bangles, even belts."

Most of the chains and jewels which will satisfy this "insatiable appetite" are inspired by, if not frankly copied from, jewelry of the past. Renaissance belts and necklaces encrusted with jewels, beads of the American Indian, golden Egyptian serpents coiled into bracelets, bell necklaces of India and dangling Moroccan earrings are all heaped on together to create a fantastic, clanking smorgasbord of glitter.

Carlyle once observed, "The first spiritual want of man is Decoration" and this is reflected in the collections of Field Museum. Primitive man used almost any small objects that could be strung together—berries, seeds, feathers, sea shells, bone, teeth and claws of animals—to create ornaments which were worn for both decoration and magical or religious powers.

The oldest of all records concerning jewelry making are found in Egypt. Egyptian jewelers were practicing their craft thousands of years ago—not in a primitive way, but with the skill and technique born of years of experience. Precious metals and gems were lavished over vases, furniture and chariots, as well as the Egyptians themselves. Everybody—rich and poor, adult and child—owned beads.

Beads have been called the "Adam and Eve of the jewelry family" and have endured in various forms throughout the ages. "The trade routes of early times may be traced by the beads which blazed their trails. And wherever the bead went there too, of necessity, went some wave of influence caused by the intercourse between various countries."[1]

Beads appear, too, in the history of early America as

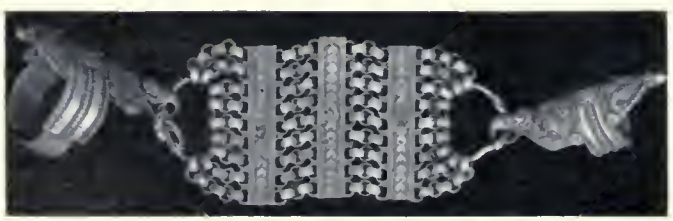
they were used to barter with the Indians. Like other explorers, Marquette and Joliet carried beads with them as gifts for the Indians and Powhattan is known to have sent a chain of pearls to John Smith.

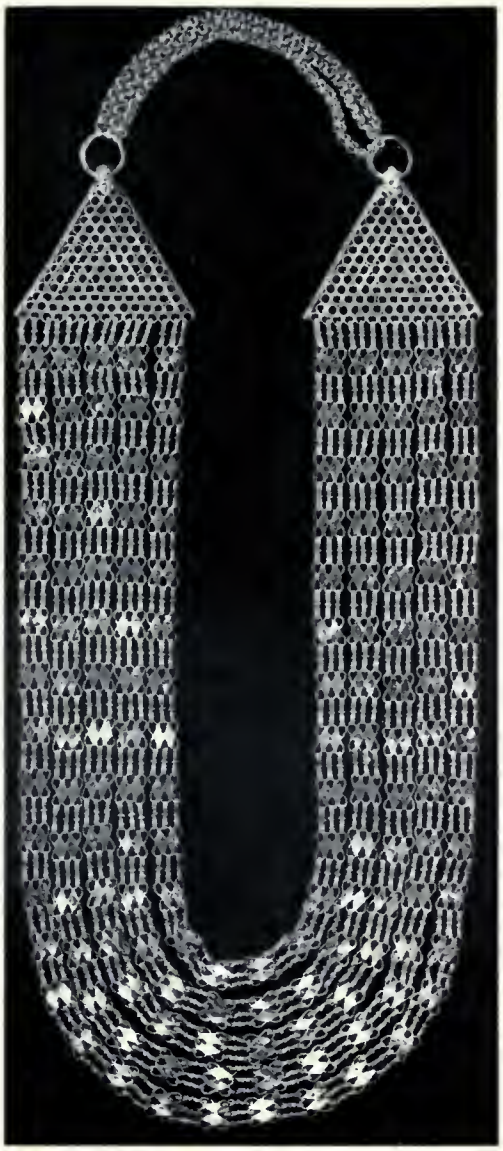
Not only beads, but jewelry of all kinds bedecked the rich Roman lady of fashion. Although the following quote from *5000 Years of Gems and Jewelry* refers to ancient Rome, it could apply to modern man as well.

"It is curious to note how the ancient Roman jewelry reflects the spirit of the times and proclaims, like a blast of trumpets, the arrogant pride of riches. The heavy, opulent necklaces, bracelets, and rings fairly wallow in wealth of gold and suggest that the people who wore them were somewhat larger than life."[2]

Graeco–Roman rings, golden bracelets and necklaces studded with stones, dating from 1–400 A.D., are on display in the Museum's fabulous Hall of Gems. A jewelry-lover from any time in history would revel in the treasures displayed in this room. There are Egyptian bracelets, rings and amulets dating back to 1800 B.C., fashioned of the finest gold. Golden Etruscan jewelry of almost unequalled delicacy dates back to 7–500 B.C. and provides sharp contrast to the huge silver pieces from the hill tribes of Algeria displayed in a nearby case. All through the Museum's anthropology exhibits there are indications of man's universal fondness for jewelry, all of which adds confidence to the security of the jeweler's craft. Other crafts may come and go, but as long as there are precious metals, jewels and people to wear them, the jeweler's craft will endure.

One of a pair of silver ankle bracelets from Nepal. Fashion designers predict that similar ornaments may be "in" this year. Jewelry inspired by India remains popular—for the daring and sure of foot, an item like that below may be appropriate. It has rings for the big and little toes, joined by an elaborate chain-link band.





This silver chandrahar (*"moon necklace"*) *from Nepal would warm the heart of any chain-link aficionado. Designs for much of the jewelry currently in fashion is centuries old.*

[1, 2] Francis Rogers and Alice Beard, *5000 Years of Gems and Jewelry*. Lippincott Co., New York, 1947. 309 pp.

Spring Journey

Plants of Illinois

"Plants of Illinois," the Spring Journey for young people, will emphasize some of the common, and not-so-common, wild flowers and plants found in Illinois. By learning to identify some of the plants in the Museum's botany halls, boys and girls can readily recognize them outdoors this spring and summer, increasing their knowledge and enjoyment of nature.

The Journey begins in an Illinois woodland (Hall 29) where a wide variety of wild flowers appears in great numbers in the spring. They are usually short-lived, because, as the trees leaf out, the amount of sunlight reaching the forest floor decreases sharply.

A familiar spring wild flower is the jack-in-the-pulpit, also called the Indian turnip. Indians boiled the turnip-like roots before eating them. Eating the raw roots creates a burning sensation in the mouth and tongue. The white trillium, one of several species in Illinois, becomes pink in color as it matures. Of 24 species of violets found here, the blue violet is one of the most common and abundant and is, appropriately, our state flower.

A number of interesting plants are also included in the Spring Journey. Mistletoe is a small shrubby plant that grows on trees. Birds carry the sticky seeds to trees. Upon sprouting, the seeds send root-like suckers through the bark so that some nourishment can be obtained from the tree. The bloodroot, named for the orange-red juice in its roots, has poisonous stems, roots and juice. The Indian pipe, found in deep, shady woods, lacks chlorophyll, so it cannot make its own food. It obtains nutrients from decaying wood or from other decomposing plant matter.

Many of Illinois' plants are found in marshes, swamps, bogs and in streams and ponds. The tiny flowers of the cattail are packed in dense, sausage-shaped spikes. This plant offers some food and cover to various species of wildlife. The arrowhead, named after its arrow-shaped leaves, is sometimes called the duck potato, and waterfowl, as well as muskrats, feed on its underwater corms or tubers.

The bladderwort is a rootless plant that grows in water. Small bladder-like traps on the leaves often catch small insects or crustaceans which the plant absorbs or digests to get nutrients. Another "carnivorous" plant found in bogs in Northern Illinois is the pitcher plant, which receives part of its nourishment from insects caught in its water-filled, pitcher-like leaves.

Open fields contain a wealth of plant life that may also be found in vacant lots, backyards and along roadsides. The Jerusalem artichoke, or tuberous sunflower, a plant native to the United States, has been introduced into Europe. Its tubers are eaten and are supposed to taste much like potatoes. Both chicory and dandelions originally come from Europe. Although commonly regarded as weeds, both are very useful to man. Dandelion leaves may be used in salads and the flowers made into wine. Chicory roots can be eaten raw, like carrots, or when roasted, may serve as a substitute for coffee.

The lady's slipper, or moccasin plant, is one of the prettiest of the northern orchids.

Both the common and giant ragweed, often sources of irritation to those suffering from allergies, produce seeds that are eaten by many birds in winter. The milkweed, named for the milky juice in its leaves and stems, produces fluffy seeds that are spread by the wind. The prickly pear, or dune cactus, is found in sandy areas of Illinois, such as the dunes region of southern Lake Michigan.

Poison ivy is found in many places in the state and in a variety of forms. It takes practice to make sure identifications of these plants. Even the leaves may vary in outline and size. In summer it has white flowers; in fall, white, waxy berries. The plant's fluid is irritating to human skin, and touching any part of the plant may result in blistering and itching.

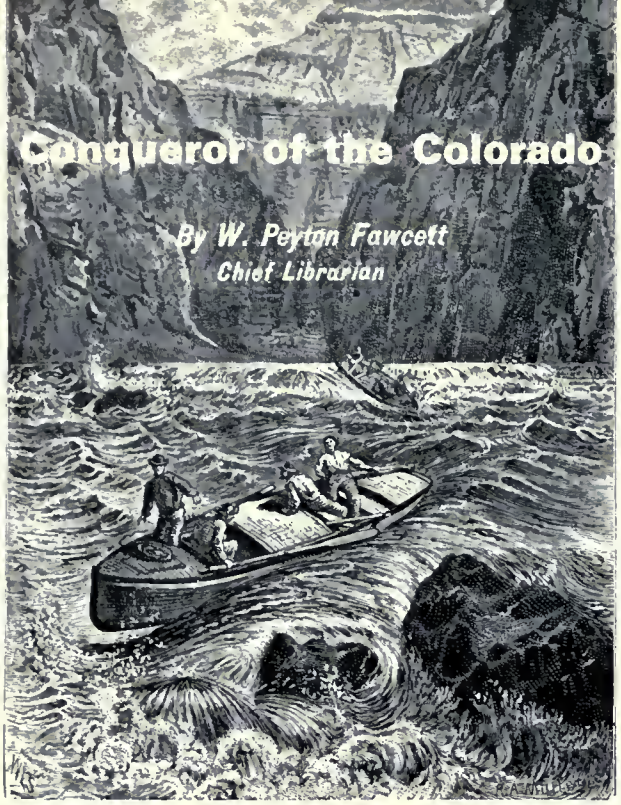
The plants featured on the Journey are varied, but represent only a small portion of the flora found in Illinois.

The Raymond Foundation's Journey Program is planned to help children discover items of interest in the Museum. Four different Journeys are offered each year. When a child successfully completes four Journeys, he receives a Traveler's Award. An Adventurer's Award is given to a child completing eight Journeys; an Explorer's Award to a child completing 12 Journeys.

Upon completion of 16 Journeys, the Explorer becomes a Beagler and is presented with a copy of Charles Darwin's *Voyage of the Beagle.* After reading this book and taking a special journey through the Museum to see items related to Darwin's historic Journey, the boy or girl becomes a member of the Museum's Discoverer's Club.

Journeys are offered free to any child who can read and write. Information on the program and Journey sheets can be obtained at Museum entrances.

—George Fricke, Raymond Fondation



"Running the Rapids." (Illustrations from original engravings in Powell's report to Congress.)

In every century there have been men who, fired by a desire for knowledge or personal glory and love of adventure, have braved disaster and death to conquer the unknown: to go where no man has gone before and to see what no human eyes have seen before. One such man was Major John Wesley Powell (1834-1902), the pioneer explorer of the Grand Canyon of the Colorado River. This is the centennial year of that achievement and those who elect to take the Museum's Grand Canyon tour will have the pleasure of following part of the course of his expedition.

On May 24th, 1869, Major Powell set out from Green River City in Utah with a party of nine men and four boats. His plan was to follow the Green River to the Colorado and the Colorado to the foot of the Grand Canyon. He knew that his point of departure was 6,000 feet above sea level and that during the course of his expedition he would descend more than a mile. This meant that falls and rapids would be numerous and quite possibly deadly. He was also well aware of the many rumors and stories told "in the hunter's cabin and the prospector's camp." In his EXPLORATION OF THE COLORADO RIVER OF THE WEST AND ITS TRIBUTARIES . . . (Washington, 1875) he wrote: "Stories were related of parties entering the gorge in boats, and being carried down with fearful velocity into whirlpools, where all were overwhelmed in the abyss of waters; others, of underground passages for the great river, into which boats had passed never to be seen again. It was currently believed that the river was lost under the rocks for several hundred miles. There were other accounts of great falls, whose roaring music could be heard on the distant mountain-summits. There were many stories current of parties wandering on the brink of the cañon, vainly endeavoring to reach the waters below, and perishing with thirst at last in sight of the river which was roaring its mockery into dying ears."

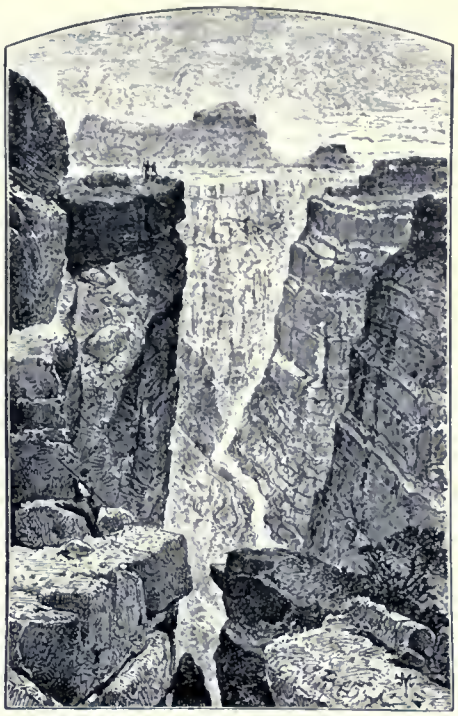
Powell's appreciation of the risks he was taking was shown by the great care with which he made his preparations. He spent two years making geological studies among the heads of the canyons leading to the Colorado and collected all the information that he could. He had his boats built here in Chicago to his specifications: "Three are built of oak; stanch and firm; double-ribbed, with double stem and stern posts, and further strengthened by bulkheads, dividing each into three compartments. Two of these, the fore and aft, are decked, forming water-tight cabins. It is expected these will buoy the boats should the waves roll over them in rough water. The little vessels are twenty-one feet long, and, taking out the cargoes, can be carried by four men. The fourth boat is made of pine, very light, but sixteen feet in length, with a sharp cut-water, and every way built for fast rowing, and divided into compartments as the others." The necessary equipment and provisions for ten months were divided into three equal parts and distributed among the boats so that the expedition would "not be entirely destitute of some important article should any of the boats be lost."

These preparations were found to be well warranted, for the expedition soon encountered the first of a great number of rapids and falls. On June 9th one of the boats was completely wrecked and one of its crewmen left the expedition a month later saying that he had "seen dangers enough." The rest of the party moved on, gradually adjusting to the difficulties and learning to master them. Powell quickly developed his method of taking the boats through the rapids: "The 'Emma Dean' [named for his wife] goes in advance; the other boats follow, in obedience to signals. When we approach a rapid, or what, on other rivers, would often be called a fall, I stand on deck to examine it, while the oarsmen back water, and we drift on as slowly as possible. If I can see a clear chute between the rocks, away we go; but it the channel is beset entirely across, we signal the other boats, pull to land, and I walk along the shore for closer examination. If this reveals no clear channel, hard work begins. We drop the boats to the very head of the dangerous place, and let them over by lines, or make a portage, frequently carrying both boats and cargoes over the rocks, or, perhaps, only the cargoes, if it is safe to let the boats down." There were frequent spills and mishaps. While running a rapid on July 11th Powell was thrown from the boat: "I soon find that swimming is very easy, and I cannot sink. It is only necessary to ply strokes sufficient to keep my head out of the water, though now and then, when a breaker rolls over me, I close my mouth, and am carried through it. The boat

is drifting ahead of me twenty or thirty feet, and, when the great waves are passed, I overtake it, and find Sumner and Dunn clinging to her. As soon as we reach quiet water, we all swim to one side and turn her over." The boats were frequently swamped and the provisions wetted again and again. July 18th was spent "obtaining the time, and spreading our rations, which, we find, are badly injured. The flour has been wet and dried so many times that it is all musty, and full of hard lumps. We make a sieve of mosquito netting, and run our flour through it, losing more than two hundred pounds by the process. Our losses, by the wrecking of the [boat], and by various mishaps since, together with the amount thrown away today, leave us little more than two months' supplies, and, to make them last thus long, we must be fortunate enough to lose no more."

On August 13th the expedition arrived at the beginning of the "Great Unknown," the Grand Canyon. Powell wrote: "We are three quarters of a mile in the depths of the earth, and the great river shrinks into insignificance, as it dashes its angry waves against the walls and cliffs, that rise to the world above; they are but puny ripples, and we but pigmies, running up and down the sands, or lost among the boulders. We have an unknown distance yet to run; an unknown river yet to explore. What falls there are, we know not; what rocks beset the channel, we know not; what walls rise over the river, we know not. Ah, well! we may conjecture many things. The men talk as cheerfully as ever; jests are bandied about freely this morning; but to me the cheer is somber and the jests are ghastly." In the canyon the rapids and falls followed each other in quick succession and some seemed almost impossible to run or portage. It rained continually, adding to the burdens of the party. Supplies were running low, and on August 17th there remained "only musty flour sufficient for ten days, a few dried apples, but plenty of coffee." After many vicissitudes they emerged from the rapids on the 21st. "Good cheer returns," Powell wrote, "We forget the storms, and the gloom, and cloud covered cañons, and the black granite, and the raging river, and push our boats from shore in great glee."

The boats moved swiftly now. On August 25th, Powell noted: "Thirty five miles today. Hurrah!" and on the 26th: "A few days like this and we are out of prison." But the 27th brought disappointment, for a new and very dangerous set of rapids appeared and Powell decided to run them the next morning. That evening three of his men, believing that to continue would lead to certain destruction, decided to leave the expedition and to climb out of the canyon. Powell was determined to go on: "To leave the exploration unfinished, to say that there is a part of the cañon which I cannot explore, having already almost accomplished it, is more than I am willing to acknowledge." The next morning the remainder of the party, six men in two boats, pushed on, leaving behind everything except the



"The Grand Cañon, looking east from To-ró-weap."

provisions and the expedition's map and records. The rapids were successfully run, though with great difficulty, and by evening the men were safely out of danger. At 12 o'clock on August 29th the expedition passed out of the Grand Canyon. "Now," Powell wrote, "the danger is over; now the toil has ceased; now the gloom has disappeared; now the firmament is bounded only by the horizon; and what a vast expanse of constellations can be seen! The river rolls by us in silent majesty; the quiet of the camp is sweet; our joy is almost ecstasy."

The full story of this extraordinary expedition may be read in Major Powell's EXPLORATION OF THE COLORADO OF THE WEST AND ITS TRIBUTARIES, of which there have been several reprints, one in paperback. It is a fascinating book, written in a concise and engaging style. One of its most refreshing qualities is the modesty of its author; he neglects to mention that he has lost an arm at the battle of Shiloh and was one-handed when he made his epic descent of the Colorado.

Field Museum's 17-day Grand Canyon Tour (September 12–28) will be an exciting trip commemorating Major Powell's triumph in being the first to navigate the Colorado River. Led by Dr. Matthew H. Nitecki, Assistant Curator of Fossil Invertebrates, tour members will use the safest and best riding animals and boats available, with expert guides on hand as they explore the geology and natural wonders of the area. All expenses (transportation, accommodations, meals, etc.) and a $200 tax-deductible donation to Field Museum are included in the $1,025 cost of the Tour, which is limited to 28 persons. Additional information and reservations are available by writing: Grand Canyon Tour, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois, 60605.

Teschendorf Named Security Chief

August N. Teschendorf, a former investigator with the Bureau of Investigation and Identification of the State of Illinois, has been appointed Field Museum's Chief of Security. In his new position, Mr. Teschendorf will supervise the Guard force and be responsible for the development and implementation of an expanded safety and security program for the Museum. A graduate in police administration from Michigan State University, he has lectured at several area universities.

Rowley Fellowship Fund Established

Field Museum has received $25,000 from the estate of the late Stella M. Rowley for the purpose of establishing the William A. and Stella M. Rowley Fellowship Fund. The investment income from this fund will be used for "the purpose of giving some worthwhile student or students the privilege and benefit of continuing his or her studies in a field related to the purposes of the Museum," according to the terms of Mrs. Rowley's will. Students will be chosen from undergraduate and graduate levels in academic areas corresponding to the Museum's four departments, Anthropology, Botany, Geology and Zoology.

CALENDAR OF EVENTS *March hours: 9 a.m. to 5 p.m. daily.*

March 1 Film-Lecture Series "South Seas Saga" by John Nicholls Booth. 2:30 p.m. in the James Simpson Theatre.

March 2 "Earth, Life and Man" 75th Anniversary Lecture Series "The Gentle Art of Rubbing" by Dr. Kenneth Starr, Curator, Asiatic Archaeology and Ethnology. 2:30 p.m. in the Lecture Hall.

March 8 Film-Lecture Series "Ranch and Range" by Al Wool. 2:30 p.m. in the James Simpson Theatre.

March 9 "Earth, Life and Man" 75th Anniversary Lecture Series "The Tully Monster and Other Wonders" by Dr. Eugene Richardson, Jr., Curator, Fossil Invertebrates. 2:30 p.m. in the Lecture Hall.

March 15 Film-Lecture Series "The Far, Far North" by Walter J. Breckenridge. 2:30 p.m. in the James Simpson Theatre.

March 22 Film-Lecture Series "The Conquest of El Sumidero" by Jack Currey. 2:30 p.m. in the James Simpson Theatre.

March 23 "This Earth, This Realm, This England" by C. P. Lyons. Sponsored by the Illinois Audobon Society, the film includes a visit to Slimbridge, the world's largest and most varied waterfowl preserve. 2:30 p.m. in the James Simpson Theatre. Admission is free.

March 29 Film Lecture Series "Western Discovery" by Laurel Reynolds. 2:30 p.m. in the James Simpson Theatre.

March 1-30 Fifth Annual Shell Show Sponsored by the Chicago Shell Club, the show includes outstanding collections of rare and beautiful shells from around the world. Hall 9 Gallery. Admission is free.

Through March Spring Journey "Plants of Illinois" The newest do-it-yourself tour introduces boys and girls to common and not-so-common plants to be found in the swamplands, woodlands and fields of Illinois. Guide sheets for the free Raymond Foundation Program are available at Museum entrances.

MEETINGS:
Chicago Shell Club, March 9, 2 p.m.
Nature Camera Club of Chicago, March 11, 7:45 p.m.
Chicago Mountaineering Club, March 13, 8 p.m.
Illinois Orchid Society, March 16, 2 p.m.
Great Lakes Chapter of Sierra Club, March 18, 7:30 p.m.

FIELD MUSEUM OF NATURAL HISTORY

Roosevelt Rd. at Lake Shore Dr.
Chicago, Illinois 60605

Founded by Marshall Field, 1893

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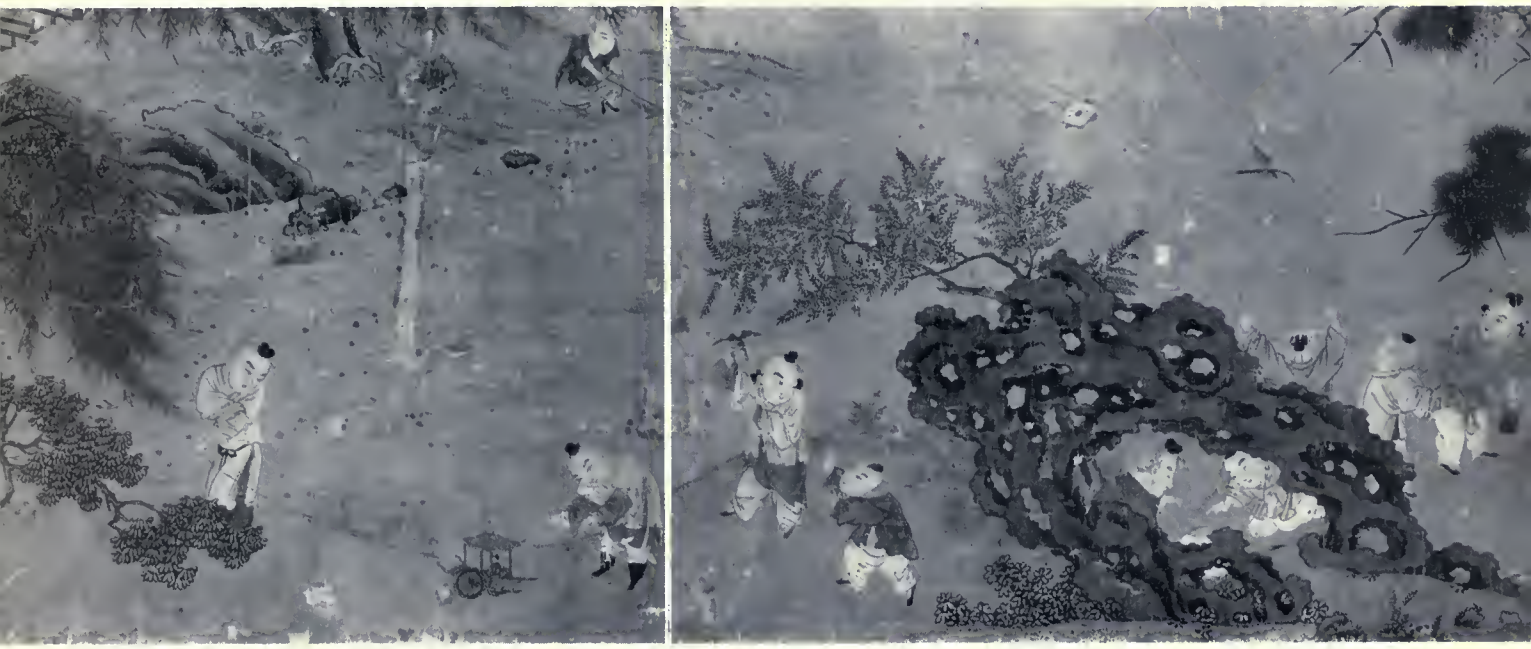
BULLETIN
Edward G. Nash, Managing Editor

BULLETIN **FIELD MUSEUM OF NATURAL HISTORY**

Volume 40, Number 4 April 1969



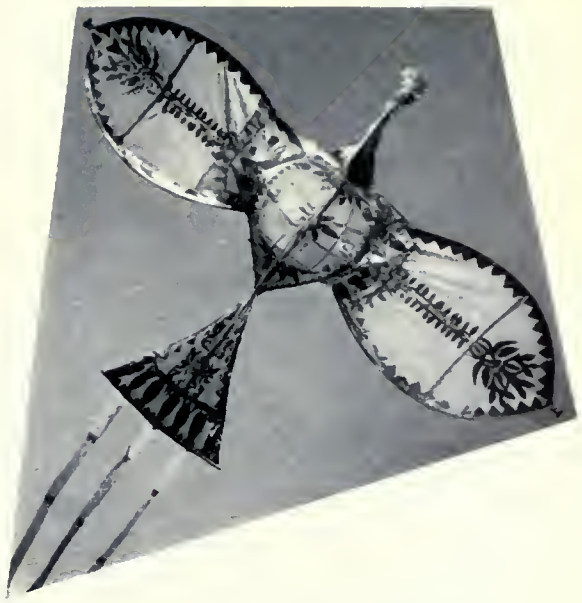
Childhood, to a child, seems endless; to an adult, watching children play, it seems timeless. We can hear the chants and see the games today that we ourselves used, and our parents before us. The boys celebrating the rites of spring on this month's cover are twelfth century Chinese, but their activities are twentieth century American, and a short walk in a Chicago park on a Saturday in spring would unroll the rest of this ancient painting.

The work is a scroll painting on silk, a Ming (1368–1664) copy of a Sung (Twelfth Century) painting by Su Han-Ch'en, called "The Hundred Youths." It is on display in Hall 32, at Field Museum.

Of special interest among the games being played in the portion of the scroll we have reproduced this month, are the little group playing Mongols and Mandarins (Twelfth Century cowboys and Indians) on the back cover and the kite flyer in the upper right hand panel, one of the earliest depictions of kite flying known.

As our contribution to spring, Field Museum is presenting a Special Exhibit, 'The Wind in My Hands," in Hall 9 Gallery. On display will be old and new kites from many parts of the world and from several well-known collections, including that of Charles Eames, the designer, and of Ben Blinn, a Columbus, Ohio, kitist.

Patricia Williams, of the Bulletin staff, writes on kites in the next few pages, and on page 5, by kind permission of James Wagenvoorn, author of "Flying Kites," published by The Macmillan Company, we reprint instructions for several kites. They are, we hope, easy enough to make that you can impress your children without losing your temper.



A bird-shaped kite from the Padang Highlands, Sumatra, collected by L. C. Cole on the Arthur B. Jones Expedition to Malaysia, 1922–23. In Field Museum's collections.

Today our skies are filled with planes of all sizes, moon-bound rockets, weather-transmitting satellites, deadly pollutants, and even a few birds. Still, people continue to send kites sloft amid the vapor trails to gracefully perform their age-old dance with the wind. When Charlie Brown of the *Peanuts* gang, a well-known "kite-ist," isn't hopelessly snarled in his kite string, he is fighting a losing battle with a sinister kite-eating tree, but still he persists because, as kite authority H. Waller Fowler, Jr. says, "There is something about building and flying your own kite that gets into the blood."

Fowler must be right because the kite has had a longer consecutive run as a plaything than any other toy except the doll. Kites were flown in China long before the beginnings of written history and over the years have served a variety of practical as well as playful uses. For example, kites have been used "as aids to oriental fishermen, when their hooks are suspended from above and no tell-tale shadows are thrown upon the water; as transports for airborne firework displays; as probers of clouds for the secrets of lightning; as aerial tugs to haul horseless carriages across land, and boats across water; . . . and as savers of life in the last war when they raised the radio aerials from the life-rafts of aircrews adrift at sea." In some civilizations, including the Polynesian, kites seem to have had some function as symbols of an external soul and were clearly associated with deities and heroes. For obvious reasons, kites were also looked upon as a means of contact with the heavens.

kites

by Patricia M. Williams
Field Museum Press

The spirits were involved in one of the kite's greatest military coups, too. When Huan Theng, a great scholar and advisor to an emperor of the Han dynasty, was assigned to think of a plan to defeat the enemy besieging the palace, he used kites. He had several made and attached bamboo sounding devices to them. Under the cover of darkness the kites were lofted above the enemy and the sounding devices moaned and wailed as they vibrated with the wind. Huan Theng next sent men into the enemy camp to spread the word that the moans and wails were warnings from the gods. The enemy fled, the kites were reeled in and the seige was over.

Reversing this procedure somewhat, superstitious people in China now fly kites equipped with sounding devices to protect their homes from the evil spirits of the night.

The military has found many uses for kites. Men were hoisted aloft to observe operations behind enemy lines, over hills or inside forts; William the Conqueror used kites to give the signal for a general attack during the battle of Hastings; a general of long ago used a kite to draw a line across a stream, then used the line to draw a cable across and in this way began a bridge—a method which has been used by modern engineers.

The airplane grounded most military kites, but it was reported that during World War II some Nazi submarines carried large, three-bladed helicopter-like kites which were used to lift a crew member into the air for long-range observation. Of course, the sub had to run along the surface of the water to create a breeze. The system apparently worked well unless an enemy craft appeared unexpectedly. The ensuing crash dive must have come as a miserably abrupt and terminal finale for the high-flying observer.

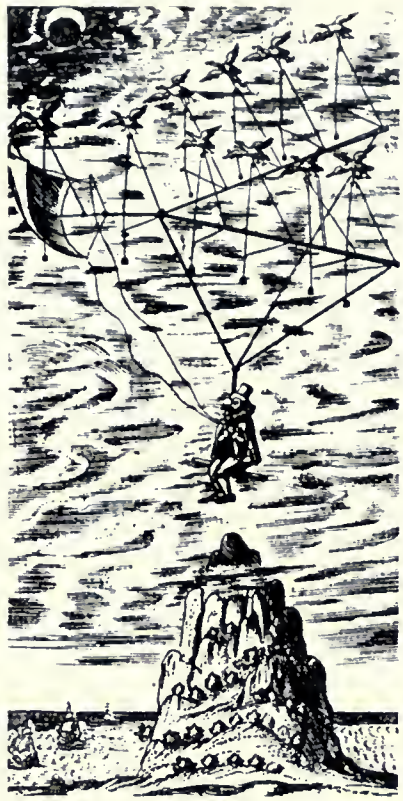
Speaking of miserably abrupt finales, several experiments with man-carrying kites were conducted before success was achieved. The following is an excerpt from a letter written by a man who was a kite-passenger at the age of 11:

". . . but I found no mention of Dr. Jules Laval of Dijon who, in 1854, made several experiments with a kite at least 10 meters high by 6 wide, flown by four or five men. At the end of its tail it carried a little wickerwork chair, in which he got me to sit, holding on to me by means of a rope. At this time the kite was some 50 meters in the air . . . I fell from a height of 9 or 10 meters, but quite slowly and was not injured.

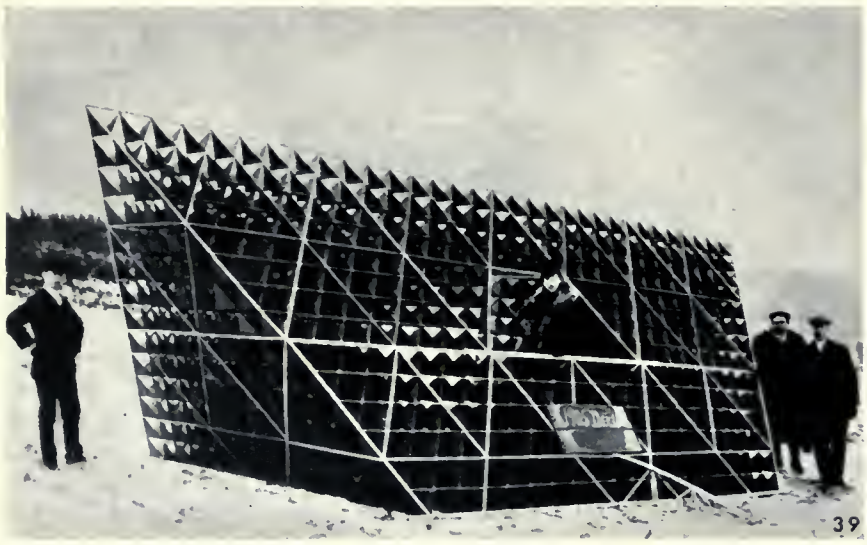
We returned home and I have never again flown from a kite."

This child-bearing kite was easily eclipsed in 1894 by Capt. B. S. F. Baden-Powell's 36-foot kite which lifted a man 100 feet into the air. The following year Baden-Powell topped himself by lifting a 150 lb. man about 100 feet in the air with a train of five 12-foot kites.

Benjamin Franklin, a celebrated kite-flyer, conducted his famous experiment in June, 1752 to demonstrate the electrical nature of lightning. Joseph Priestley wrote the following description of this experiment based on information from Franklin: "The kite being raised, a considerable



The Aerial Voyage of Domingo Gonsales, from Francis Godwin's "The Man in the Moone, or a Discourse of a Voyage Thither by Domingo Gonsales the Speedy Messenger," published in 1638. Godwin was the bishop of Hereford; his work had a considerable influence on literature and Swift is said to have derived from it the idea of the flying island in Gulliver's Travels (1727). Gonsales' trip to the moon took eleven days. Travel time to our satellite has since been cut to 6 days, round trip.



Alexander Graham Bell's "Siamese Twin Kite," in December 1905. Bell designed a series of kites, all based on a single tetrahedal module, which he duplicated hundreds of times in various constructions. The Siamese Twin kite required a 25-mile-an-hour wind to lift off. (Photo courtesy and copyright National Geographic Society and the Bell family)

Kiting on Long Island

time elapsed before there was any appearance of its being electrified. One very promising cloud had passed over it without any effect; when, at length, just as he was beginning to despair of his contrivance, he observed some loose threads of the hempen string to stand erect, and to avoid one another, just as if they had been suspended on a common conductor. Struck with this promising appearance, he immediately presented his knuckle to the key, and (let the reader judge of the exquisite pleasure he must have felt at that moment) the discovery was complete. He perceived a very evident electric spark." As Fowler notes, "It is a miracle a bolt of lightning didn't wreck both him and the experiment. He did have a silk ribbon between the wet line and his hand, but that would seem slight insulation against the force of lightning."

In 1749, three years before Franklin's experiments with the electric kite, Dr. Alexander Wilson and Thomas Melville of Scotland used kites to carry thermometers into the upper air to record temperatures high above the earth. For many years thereafter weather observations were taken by kites carrying the small recording instruments aloft. In fact, the world's record for altitude with kites was made at a meteorological observation point at Mount Weather, Virginia on May 5, 1910 when a train of ten kites took about 8½ miles of piano wire to a height of 23,835 feet. This was no casual effort made by one man running along an open field to loft his kite. It involved a full crew of men, a ground winch and several hours of work.

The United States Weather Bureau stopped using kites after 1931, partly because the kite wires endangered airplanes and partly because more efficient methods of collecting data had been developed.

While our aeronautical and scientific expertise has generally eliminated most of its practical jobs, the kite lingers on. Kite-flying has long been a national pastime of the Koreans, Chinese, Japanese and Malayans. In his book *Chinese Kites*, David F. Jue describes a number of unusual kite events including The Festival of Ascending on High which takes place from the first to the ninth of September. "After school, students fly kites of all shapes and designs. On the ninth day of the festival, the schools declare a holiday so that all of the pupils can fly their kites to their hearts' content. At the end of the day, when one is finished flying his kite, one lets the kite go, string and all. All of the evil, bad luck, and sickness are carried away with the kite. Custom requires that whoever finds the kite after it has fallen to the ground must burn it, just as we burn Christmas trees after Christmas."

Here in America, too, where we are confronted with an ever-growing fund of leisure time, the kite fulfills a unique and versatile role. Kite-addicts enthusiastically tout kite-flying as one of the few sports that can be enjoyed alone, with friends, or in competition with others. Windless or rainy days may be passed by building kites ranging from the basic "3-sticker" to elaborate and artistic kites in the shapes of birds, men, ships, butterflies and dragons. The project can carry you through "planning, construction and control. You are architect, contractor and pilot in rapid succession." Best and most satisfying of all—your creation will *fly*.

Tailless Malay (Eddy) Kite

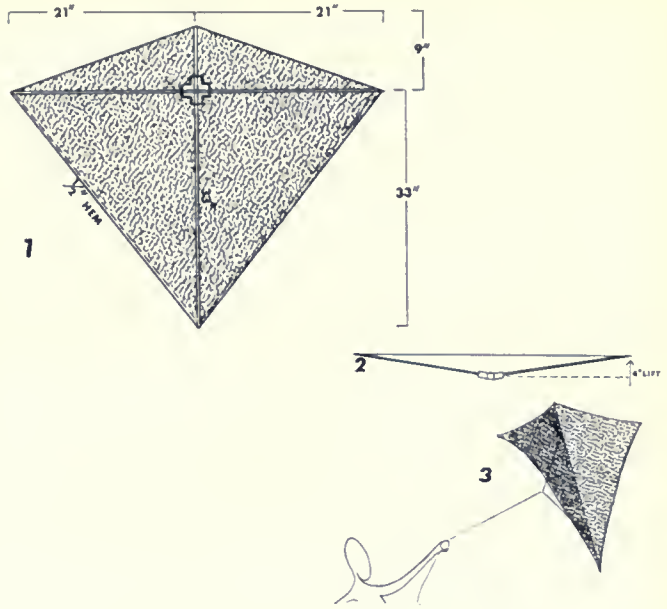
Sticks: 2 (A) sticks, ⅜" x ½" x 42"

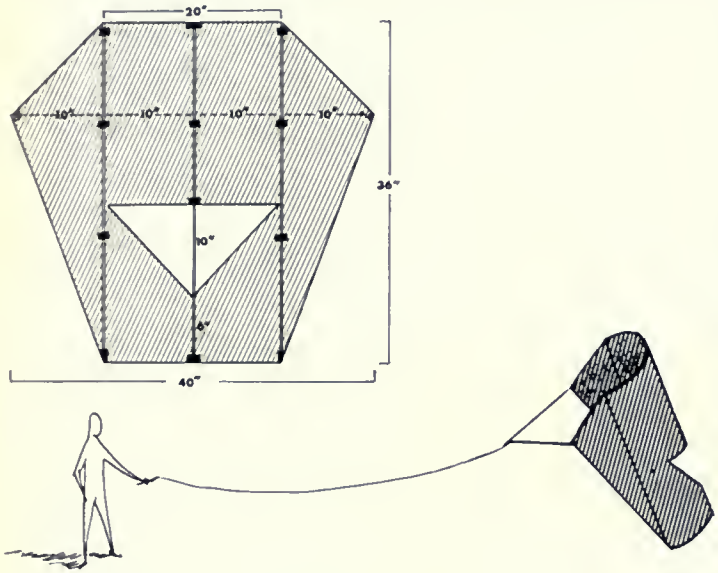
This is a version of the kite patented by photographer William Eddy in 1897. It is easy to build and flies extremely well.

Tie the sticks together at the midpoint of the cross stick and 9 inches down from the top of the vertical stick.

Bend the cross stick 4 inches and tie securely. The kite is then ready to be covered with strong paper or cloth.

The bridle for this particular kite is 63 inches long. A rule of thumb to keep in mind when building Malay kites of various sizes is that the bridle string should be one and one-half times the length of the vertical stick. The flying line should be tied approximately 80 percent of the distance up from the lower end of the bridle line. It can then be adjusted up or down, depending upon the strength of the wind.





Scott Sled

3 (A) sticks, ⅜" round x 36"

1 sheet of plastic or polyethylene

Cut the sheet exactly as shown in Diagram 1. Take particular care to get the triangular vent centered on the sheet. Place glue on the sticks and press them into place. Then run a strip of reinforced tape around the perimeter of the kite to prevent the fabric from fraying or tearing, and laysmall stripsof tape over the sticks as shown in the illustration. Punch holes in the tips of the "wings"and reinforce the edges of the holes with glue or light tape. The bridle line attaches to the two holes and should extend 72 inches. The flying line is tied to the midpoint of the bridle line.

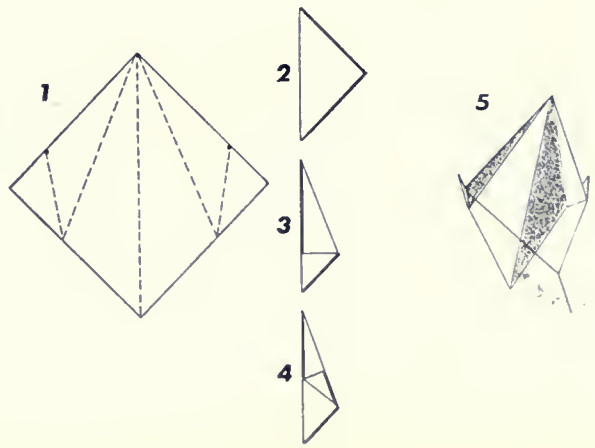
The Scott Sled is extremely easy to launch and requires no running. Simply feed it out at first by hand and then let it pull the string out at its own pace.

The Living-Off-The-Land Kite

1 square piece of paper

The sheet of paper can be any size up to 24 inches square. Fold it in three steps as shown in Diagrams 2, 3, and 4. First fold the paper in half along the diagonal. Then fold each half back so that the center of the paper is even with the two outer fold edges. Then (Diagram 4) fold flaps back from the bottom edge so that they are lying flat against the second fold.

Attach a bridle as shown in Diagram 5. If the kite's flying motion is erratic, a tail made out of strips of paper can be attached to the bottom.



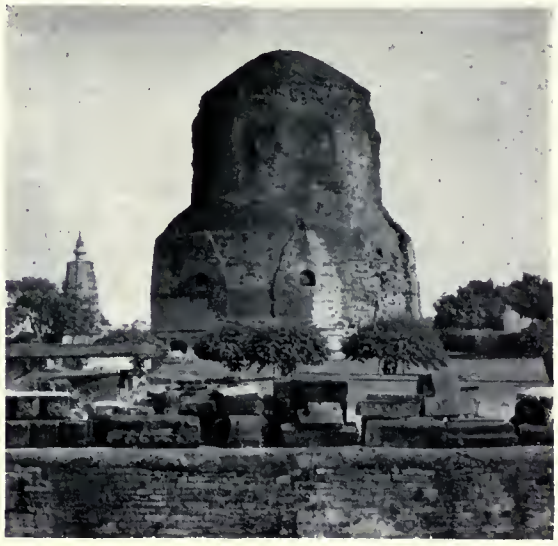
Interest High in Tour of Himalayan Kingdoms and Northeastern India

The response to Field Museum's Tour of Himalayan Kingdoms and Northeastern India has been so enthusiastic that a second group is being organized. The first group, Tour A, will leave January 30, 1970 and return February 27. The new Tour B is planned for January 2 – January 30, 1970. Both tours will have the same itinerary.

Cost of the 29-day tour, including a tax-deductible $500 donation to Field Museum and all expenses except *baksheesh,* is $2,657. The countries of Nepal and Sikkim are included in the tour as are some of India's most colorful and exciting cities: Delhi; Jaipur; Agra, home of the Taj Mahal and the Keolado Ghana Bird Sanctuary; Khajuraho, city of thousand-year-old temples; Benares, on the sacred Ganges River; Darjeeling; and Badogra.

Hari Karan Singh, a doctoral student at Hindu University in Benares, will accompany the Tour during part of the trip as an expert in religions. Also accompanying the Tour will be Phil Clark, Field Museum Public Relations Counsel and specialist on plants, and, in Nepal Dr. Robert Fleming, a bird collector for Field Museum in India and Nepal since the mid-thirties. He will share his expert knowledge during bird walks and informal conversations with Tour members.

The Tour is limited to nine elephant-loads (36 persons). Additional information and reservations are available by writing: Tour of Himalayan Kingdoms and Northeastern India, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois, 60605.



The Deer Park of Sarnath, near Benares, is sacred to Buddhists as the place where the Lord Buddha gave his first sermon. Ancient stupa in the center marks the place where he spoke.

Above, *Hari Karan Singh, a doctoral student at Hindu University in Benares, presses his hands together in the traditional Nomaste greeting. He will accompany the Tour from Benares to Nepal, Darjeeling and Sikkim.* Left, *Bathers dress after a ritual dip in the sacred Ganges River at the Holy City of Benares.*

MEMBERS' NIGHT—1969

In this Diamond Anniversary Year, Members' Night will provide a nostalgic backward look at the past 75 years as well as focusing on current Museum activities.

A major attraction will be a preview of the 75th Anniversary Exhibit: "A Sense of Wonder, A Sense of History, A Sense of Discovery," which covers the Museum's progress from its inception in the 1890s and explores the philosophy of the Museum toward the natural sciences.

The era of the Museum's founding, at the close of the Columbian Exposition in 1893, will provide a theme for much of the evening's entertainment as well. Films of early expeditions and old slides shown with a lantern projector will recreate the early years of Field Museum. There will also be live entertainment in Stanley Field Hall.

In keeping with the Members' Night tradition, behind-the-scenes research and work areas on all floors will remain open, with staff members on hand to welcome Museum guests and explain aspects of the various exhibits, which emphasize both current research and the Museum's history. These departmental exhibits include:

Department of Anthropology—Outstanding selections from archaeological and ethnological collections from Americas, gathered in a mass effort especially for the World's Columbian Exposition, and which later formed the nucleus of the young Museum's collections; a special feature in the Conservation Laboratory; and an open house in the East Asian Study.

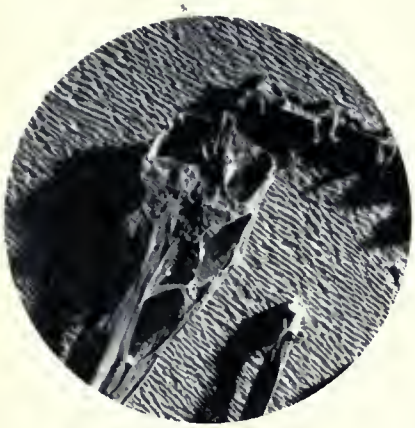
Department of Botany—A replica of "Ye Olde Apothecary Shop," complete with medicinal and aromatic herbs, condiments and spices in old-fashioned jars; "Sex and the Single Plant, or, Plant Reproduction as Seen Through the Microscope," and two slide lectures, "Evolution of Flowers and Their Insect Pollinators," and "Tropical Climate and Vegetation."

Department of Geology—Actual samples of fossils from local strip mines will be on display; "Let's Look At Rocks," unusual specimens in Museum collections with color slides explaining how the rocks were formed and how to interpret them; and a discussion, "How the Deformation Structures in Contorted Metamorphic Rocks are Studied."

Department of Zoology—"The Color Question in Gibbons," with illustrations; "Fossil Specimens of Beaked Whales Under Investigation;" "Tangible Results of the 1968 Street Expedition to Iran;" "Variation in One Family: Horns of the Bovidae;" "Some New Birds Described by the Museum's Staff Since 1893;" "Giant Turtles—Living and Extinct;" "Polaroid Micro-Photography of Skulls;" "Photographic Exhibit: Construction of Housing, Division of Fishes, 1950;" "Insect Collections—Old and New;" (History of the Division); "How to Make an Insect Collection;" "Mollusks Old and New, Plus a Visit to Inner Space;" "Some Highlights in the History of the Division of Vertebrate Anatomy."

This annual event is a fine opportunity for Members to get acquainted with all the Museum's many facets—education, exhibition, research and publication. This year, with its historical background as the focal point, the Museum's progress can be traced in a concrete way. Memorabilia from the Museum's first home in the Palace of Fine Arts in Jackson Park and the contributions of the people associated with it then and now tell the story. Whether you seek out the fine examples of Carl Akeley's taxidermic creativity, the huge and elaborate tapestry made in Japan expressly for the Columbian Exposition, and the fine collections on display in the scientific departments or simply enjoy a relaxed stroll through the 75th Anniversary Exhibit, we think you will find Members' Night 1969 an enjoyable and rewarding occasion.

75th Anniversary Exhibit



May 17 - November 16, 1969

A Sense of Wonder

Museums which are dedicated to collecting, studying and preserving the phenomena of nature do not exhibit these objects for their own sake but to enrich the human heart and mind. Each object in nature has rich expressive capabilities. A paleolithic tool may speak of the dawn of consciousness. A meteorite, of worlds beyond our imagining. A cup, of the unity of man. A butterfly, of the process which brought us into being.

A Sense of History

The opulent, troubled 1890s were the climax of an amazing century of industrial and scientific revolution. Field Museum was a product of that age, founded by the leaders of a rough, vigorous young city. Their far-sightedness has created an institution with world-wide exploration and research commitments and educational programs for students at every level, drawing visitors from all parts of the earth.

A Sense of Discovery

Research is one of the fundamental activities of Field Museum and because exhibits are a direct link between the research scientist and the public, three subjects of current curatorial research are interpreted here. One display explores the variation in hair, skin and eye colors in mammals. Problems in interpreting the fossil record are highlighted by a study of our plant model, *Cycadeoidea,* reconstructed from fossil material. Archaeology becomes more than an entertaining pastime in the exhibit of Southwestern Indian material, which gives us insights into our own culture and its dilemmas.

In order to bring the 75th Anniversay Exhibit before the public, nearly every department contributed the time and energy of its staff members. Appropriate material for the exhibit was selected by a committee of scientific staff members and Exhibition Department personnel. Hours were spent on research which yielded marvelous old photographs, obscure and interesting newspaper clippings, records of expeditions, and even old lantern slides. The collections themselves were carefully examined for outstanding specific items to be included in the exhibit—A Sense of Wonder, A Sense of History, A Sense of Discovery. Dozens of books were consulted and hundreds of photographs reviewed before the exhibit components were decided upon. The final responsibility for coordinating the tremendous amount of material and designing an effective display rested with the newly expanded Exhibition Department. Some of their efforts are recorded here.

Small models of the various exhibit components were set up in this clear plastic, table-sized "hall" by Mary David and Robert Martin, Exhibit Designers.

Hours of painstaking work at drafting tables are the prelude to a successful exhibit. Design Director Ben Kozak (left) and Kathleen Kuhlman, who works in graphics production, concentrate on aspects of the 75th Anniversary Exhibit.

Restorer Raymond Wielgus treats a patch of decayed wood on an unusual Haida moon crest made about 80 or 90 years ago. It was found at Skidgate in the Queen Charlotte Islands, British Columbia. This artifact is one of several in the exhibit on public display in the Museum for the first time since the Columbian Exposition.

Hall 3, which housed the Hall of Man, has been revamped for the special exhibit. Malvina Hoffman's sculptures have been placed in other parts of the Museum and will be re-installed here in 1970. The carpet being put down here covers nearly 7,500 square feet.

JAMES EDWARD LITTLE

Dealer in Savage Weapons, Curios, Skins, Horns, Ivory, &c.

An Object Lesson

By

Christopher C. Legge, Custodian of the Collections, Department of Anthropology

and

Edward G. Nash, Managing Editor

Museums have their troubles, and two belong to the criminal classes: The man who is trying to take something out of a collection—the thief—and the man putting something into a collection—the faker. The subject of this article was a Little of both.

In 1958, when the celebrated Oceanic collection of Captain A. W. F. Fuller came from England to Field Museum, it contained some dozen specimens which Captain Fuller considered to have been manufactured by James Edward Little, who was perhaps the cleverest manufacturer of Maori and South Sea Island fakes. Little dealt in genuine artifacts, altered ones and outright fakes. Fuller, who knew his Oceania, knew which was which, and purchased some of the fakes for the moral lesson they contained for collectors.

From Captain Fuller's precise notes, some correspondence, and newspapers, we have gathered together what little is known of James Little's unobtrusive, sad life.

The General Register Office, Somerset House, London, tells us that James Edward, son of James Little Gardener and Mary Ann Little, formerly Thomas, was born December 20th, 1876, at The Lodge, Rockend, Torquay, in the County of Devon. His entry into his own peculiar criminal specialty was, as it is so often, fortuitous. Fuller writes, "Little was an antique furniture dealer and repairer, somewhere on the South Devon coast. As a sideline, his wife let lodgings during the summer months and one year about 1900, a well-known London dealer of natural history and native specimens, J. B. Russell by name, who himself gave me these particulars, took these lodgings quite by chance. One day he was looking around Little's storeroom when he came upon some native curios and, although Little did not trade in such things, he promised to look for them in the future and pass them on to Russell, with the result that a profitable business ensued. Little soon got the hang of things, raising his prices and devoted himself largely to this form of trading, and advertised in the "Exchange and Mart" through which medium Oldman, Beasley and myself got into contact with him. I must have made my first purchase from him about 1903–4."

From a simple dealer in Maori and South Sea artifacts, Little soon took the first step down his particular primrose path. "When he found that good prices could be got for good old Maori pieces," notes Fuller, "his procedure was to 'get' a rare specimen and copy it exactly and in the correct native way, giving it every sign of age and even 'wormholes.' Most experts were taken in by his work and I understand that he had quite a trade with the U.S.A."

About 1907, he left his wife, and she obtained a separation order and custody of their two children. After that time, he moved about a great deal, though he generally stayed in Somersetshire. In November 1913, he may have taken the last logical step in his progress. Six Maori greenstone artifacts were taken from a showcase in the Salisbury and South Wiltshire Museum. Plaster casts replaced them. Also taken were several other greenstone artifacts and a wooden kotiati—a small fiddle-shaped club. Fuller read of the theft, and a few days later received a parcel from Little, containing a kotiati. Identification was uncertain, and no prosecution resulted.

About thirty-five flint implements were stolen from the Weston-super-Mare Museum, Somerset in February 1914. Little, who was using the name Harris at the time, was tried in April for receiving stolen goods. He testified that the

WESTON MUSEUM MYSTERY.

No Light on the Disappearance of Ancient Flint Implements.

BRISTOL DEALER ACQUITTED.

Said Flints were Sold to him by a Stranger.

Little further light was thrown upon the mystery surrounding the disappearance of between 30 and 40 flint implements from the Weston public museum at the adjourned police court proceedings on Saturday. The accused, Edward Harris, of Lansdown Villas, Staple Hill, Bristol, who was charged on a warrant with stealing the flints and with receiving them well knowing them to have been stolen, told a story of how a "short, dark man," whom he did not know, called upon him and sold him the articles when he was living at Bitton. This was corroborated by two witnesses, and the magistrates, Messrs. E. A. Hardwick, B. H. Hill and ... Norman, discharged accused after only a ... tes consideration.

...stery of the actual thefts remains ...hough the subsequent move... ...e been made clear up to a ...

...e.

H.M. Resident. ...g at Kew...

was no accounting for the 17 locks being forced.

By Dr. Grey.—There were no means of telling when the flints were taken. There was a caretaker who had to see that things were all right.

Detective Sergt. F. Eveleigh, of Scotland Yard, said on March 26, he went to Mr. Fenton's shop where he saw the implements produced. On April 6 he went with Mr. Porch to the shop and the flints were identified from amongst a number of others.

P.C. Carter said on Saturday, February 14, he was notified that some flints had been stolen from the Museum. He proceeded there and saw that 19 cases had been forced. The locks of most of them had been broken. On the following Monday he met Mr. H. N. Davies at the Museum and he gave witness a rough list of the missing flints. On March 27, witness went in company with P.S. Golder, of the Gloucestershire police to Harris's place, at Lansdown View, Staple Hill, told him his object and cautioned him. He said "In the year 1911, I was living at 40 Upper Arcade, Bristol. I was there, on several occasions, offered flint heads and bought some. Twelve months ago I lived at Wellington. I then came to live at Bitton, near Keynsham. In August last or about, a short man whom I cannot describe brought me 20 flints, axe heads, arrow heads and knives. The most of these I sent to Mr. Fenton." Witness asked him if there were any horse shoe scrapers amongst them and he replied "No." On April 8 witness arrested Harris on a warrant. He made no reply to the charge.

By Dr. Grey.—He asked prisoner if he k... Mr. Morrish. He did not tell Harris t... Morrish had told him that he had sol... to him. When Harris said he did n... he did not say that either Morrish ... liar. Harris did tell him that Morrish.

A

Defen... ...ise

That was not the act of a man who had bought a thing well knowing it to have been stolen. There were lots of ways by which a receiver of stolen goods could get rid of his stuff, but that was not one of them. Mr. Fenton bought the flints in exactly the same way as Mr. Harris did, from a man he did not know, and because he thought he could make a little profit.

A remarkable fact was that there was no discovery that the flints were missing for about eight months. It was really an extraordinary state of affairs; he thought he should open his eyes rather wide at a state of affairs like that. He should begin to wonder and think things. Eight months and no discovery reported, and the locks broken open and cases rifled!

There was not the smallest vestige of evidence of guilty knowledge in Mr. Harris's mind. It was most unfortunate that he happened to buy those particular things, but the theory that he bought them with an inner knowledge was knocked on the head at once by his course of conduct. It was a case where a jury could not bring in a verdict except for acquittal and he therefore asked the Bench to dismiss the case at once.

The magistrates retired and after an absence of only a few minutes Mr. Hardwick announced that prisoner would be acquitted.

The verdict was received with a fervent ejaculation of "Thank God!" by prisoner's sister, and there was also some slight applause.

Little's first brush with the law ended in acquital, as reported by the Weston-super-Mare Gazette. Shortly after this, Captain A. W. F. Fuller ended his ten years of dealing with Little, or "Harris."

man who had sold them to him was a stranger, but apparently respectable. The evidence was weak; Little-Harris was acquitted.

But the evidence was strong enough for Captain Fuller and in May, Little received a delicately worded note which severed their ten-year trading:

> "Dear Sir,
>
> I regret that certain information has come to my knowledge which makes me disinclined to make further purchases from you & I accordingly enclose a cheque for £8 to close the outstanding account. By this action I do not wish you to assume that I, in any way, cast reflection upon you, but I am adopting this course as, from what I have learnt, you have been somewhat unfortunate with your purchases of late,
>
> Yours faithfully,
> A.W.F.F."

Although he never dealt with Little again, and indeed had never met Little, who seemed to avoid personal contact with his customers, Fuller maintained a kind of amused interest in Little's work. Only a month before his break with the dealer, Fuller purchased a quite genuine Maori preserved head from him. Twenty-two years later in Stevens' auction rooms in London, he saw a carved wooden mask, considered genuine. It seemed familiar and it suddenly dawned on him that it had been copied from the original head sold to him by Little. He determined to buy it: "It fell to me for ten pounds, reasonable as a mere work of art, but dirt cheap as an object lesson to all students and especially museum curators." Both heads are in our collections; the genuine one is on display in Hall J.

In 1951, Captain Fuller purchased a human tibia trumpet, for £1 10/. He recognized the artist's hand and wrote on the label: "This is one of his most interesting and amusing types of fakes, as it is unlike any Maori object at all. Here he has taken a genuine specimen—a Tibetan human leg-bone trumpet—pierced it with four key holes and carved it with great skill and labour with a 'Maori' pattern of the unmistakable Little design, especially his type of spiral and finish. I have not seen more than two or three of this type of fake and doubtless it required too much labour. There is one in the Musée de L'Homme as genuine!"

Not even the lowly fish hook escaped the hand of this master artisan. We have five faked Pacific fish hooks at Field Museum, and it seems certain that Little manufactured many more, some in Maori style, others Hawaiian.

James Edward Little's first conviction came in 1915. He had visited the Wiltshire Archaeological Society's museum at Devizes—its first visitor in three days. Soon after he had signed the visitor's book, as "H. Arnold of Swindon," a little boy came in and announced that his top had fallen through the cellar grating. The caretaker went to help the boy; when she got back, "H. Arnold" was gone, and so was a finely carved Maori feather box cover. In its place on the chest in the entrance hall was a roughly made soft wood imitation. Little was arrested four days later in a cottage near Bristol. He was given six months.

In September 1915, fresh from Devizes gaol, nearly forty years old, Little enlisted as a private soldier in the Royal Engineers. He saw service overseas, and was discharged

in 1919 for reasons of health—neurasthenia, a kind of catch-all medical discharge. His conduct had been satisfactory.

He entered the antique business in Bath, after a year's convalescence, and lived quietly for more than a decade. He had several good patrons. One was Sir Henry Wellcome (1853—1936), the Wisconsin born multimillionaire who became head of Burroughs and Wellcome, manufacturing chemists. He founded the Wellcome Museum of Medical Science and promoted archaeological research in the Sudan. Towards the end of his long life, he became somewhat eccentric. He attended most of the ethnological sales in London and bought extensively. He would offer fifty pounds for a lot—no more, no less. Captain Fuller and Professor Henry Balfour of the Pitt Rivers Museum succeeded only in offending Wellcome when they pointed out fakes in exhibition cases.

Another patron was Colonel Gaskell. Fuller wrote: "A Col. Gaskell, of near Birkenhead, paid him thousands of pounds for fakes which, when sold at Glendining's Auction Rooms after his death, fetched next to nothing, but which nevertheless were circulated round to the museums and collections of the world. One, a figure, was given to the British Museum and was placed in a case. I was only able to get it removed with the assistance of Beasley and Oldman."

The Depression ruined his business and precipitated his last dreary attempts at larceny. In 1932, Little attempted to steal a jade axe valued at three pounds from the Royal Literary and Scientific Institution at Bath. He had substitued an ordinary piece of stone, painted green, which would not have deceived anyone. At his trial, he pleaded that he was starving, that the antique trade had almost ceased and that worry had brought on his old complaints of neurasthenia and shell-shock. Six months.

In February 1934, a number of prehistoric British bronze implements disappeared from the Museum at Devizes, the same from which "H. Arnold of Swindon" had taken a Maori feather box cover nearly twenty years before. Little was arrested but the charge of theft was dismissed.

One of Little's "most amusing fakes," a carved leg bone trumpel. He was a highly skilled carver who took greal pains to simulate antiquity in his fakes—even to carving worm holes and rubbing various stains into the finish. Little was, however, often repetitive in his style and motifs, and a trained observer, like Captain Fuller, could often recognize his work instantly.

At right is a genuine Maori preserved head, which must have reached England before 1831, when a law was passed prohibiting the export of these items from New Zealand. Fuller bought it from Little in 1913. At left is a New Zealand "Taboo mask" carved in wood. Fuller saw this mask for sale in 1935 and recognized it. Little had copied the scarification of the original head on this mask. The label read "Mask brought home from New Zealand in 1848 by a relative of General Terry of Coombe Park, Bath." The mask was a product of James Little's hand and General Terry and Coombe Park, of his imagination.

Later that year, he was charged with stealing a few shillings' worth of spoons and ashtrays and a clock from auction rooms in Bath. He was seized on the premises, and in the struggle threw sand in the eyes of a captor. Six months.

In May 1939, more than five years after the Devizes theft of bronze items, Little was charged, not with their theft, but with knowingly receiving them as stolen goods. G. P. Gathercole, a legitimate dealer, testified that he had purchased twenty-one bronze items from Little in 1934. Little had said they came from an old collector fallen on hard times. A Dr. Clouston testified that he had purchased the twenty-one from Gathercole and later sold his entire collection including these twenty-one to the Ipswich Corporation Museum in Suffolk. They were identified at the trial as belonging to the Devizes Museum. The prosecution held that it was incredible for Little to have obtained all the specimens by chance. The jury agreed. Twelve months.

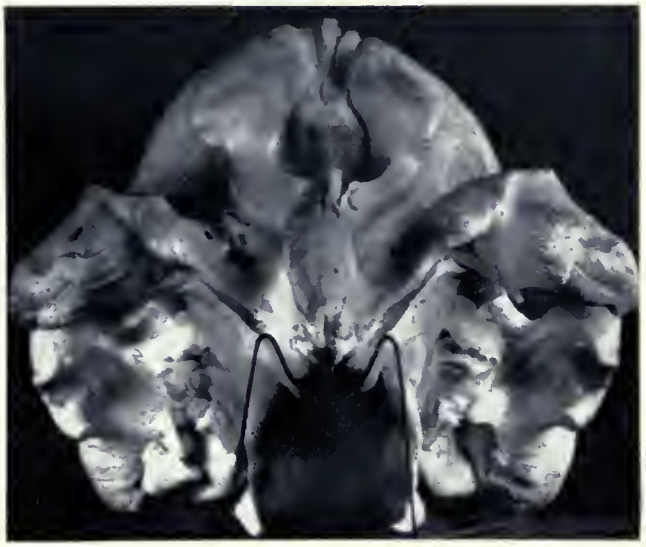
And that seems to have been the end of James Little's career. He lived in Torquay after his release from prison. Kenneth Webster, a well-known collector of Maori artifacts, met him there, living in squalor, in 1947. The General Register Office, Somerset House, which has the last word on the English, as well as the first, notes his death in Torquay, 19 July 1953, of toxaemia, at 77.

He was a masterful carver, a good faker, though repetitive, and a prize bungler as a thief. He spent too many hours producing items that fetched too little on the market. He was not a very good businessman. On the other hand, he maintained himself in business for years after experts like Captain Fuller refused to deal with him. Even after arrests and convictions, there were those who dealt with him. All of which suggests that, though Little may have been a fool, there were worse, and Barnum's remark on the frequency of suckers may be taken as the moral of the lesson.

"Earth, Life and Man," the 75th Anniversary lecture series by Museum Curators, will be concluded with the spring group of meetings beginning April 13 and continuing through May 11 on successive Sundays at 2:30 p.m. in the Lecture Hall. Talks will focus on research activities in the scientific departments—anthropology, botany, geology and zoology—and will bring Museum Members into closer contact with the work being done to increase understanding of the physical and biological world and the nature, history and evolution of life on earth. Although intended primarily for Members, admission to the lectures will also be open to interested adults of the general public.

Spring Lectures "Earth, Life and Man" 75th Anniversary Lecture Series April 13 - May 11

View of massive skull of a whale that was unknown until 1963.



April 13

ARE THERE WHALES THAT NOBODY KNOWS?

Dr. Joseph C. Moore,
Curator, Mammals

Dr. Moore has been doing increasingly intensive studies of various types of whales for the past 18 years. In his talk, he will concentrate on kinds of whales only recently discovered, whales that are represented by only a few specimens in all the world, and whales that are just now being observed for the first time, such as some in the Gulf of Mexico. His lecture will include estimates of whether new species of living whales may be found in the future, and if so, where.

New Ireland Carver at work in 1954, carving the head of a memorial sculpture (malanggan), near Libba, northern New Ireland.

April 20

PRIMITIVE ART IN MELANESIA - NEW IRELAND

Dr. Phillip Lewis,
Curator, Primitive Art and Melanesian Ethnology

New Ireland is a large island in the Bismarck Archipelago in the Territory of New Guinea in Melanesia. Since field work there in 1954, Dr. Lewis has been studying the fantastic art of this island in European museums and in the very large collection of Field Museum. The talk, illustrated with slides, will survey the art of New Ireland. Dr. Lewis's *Social Context of the Art in Northern New Ireland*, which deals with one aspect of the subject, is being published by the Field Museum Press.

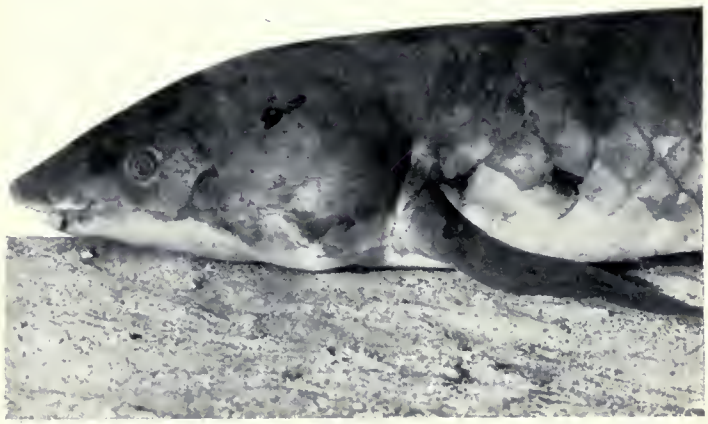
Dr. Turnbull, left, *and Dr. Lundelius sift samples of rock and soil for fossils during their expedition to Australia.*

April 27

SEARCHING FOR FOSSIL MAMMALS IN AUSTRALIA

Dr. William Turnbull,
Associate Curator, Fossil Mammals

During a year-long field expedition in Australia, Dr. Turnbull and Dr. Ernest R. Lundelius, Jr., of the University of Texas, worked on one of the few sites in that country to yield Tertiary fossil mammals, mainly marsupials. Dr. Turnbull will describe problems and successes in the project and the site's significance as the only one on the Australian continent to have a time-fixed fossil record.



The Australian Lungfish, along with several other bony fishes, is able to live out of water for quite long periods of time.

May 4

LAND LIFE OF FISHES

Dr. Karl Liem,
Assistant Curator, Vertebrate Anatomy

Many bony fishes are able to live out of water for considerable lengths of time. Dr. Liem, who has been doing intensive study on these fishes, will describe many interesting evolutionary changes affecting respiration, blood circulation, reproduction and locomotion in respect to the transition from freshwater life to land life.

Diety of the Wari culture near Ayacucho, Peru, is skillfully carved of mottled turquoise, and dates to about 800 A.D. (On display in Hall 4.)

May 11

MUSEUM RESEARCH AND THE ANCIENT CIVILIZATIONS OF PERU

Dr. Donald Collier,
Chief Curator, Anthropology

Dr. Collier will review the importance and variety of Field Museum research with special attention to work in the Department of Anthropology. He will talk about his studies of the rise of civilization in Peru and will show slides illustrating the cultural achievements of the ancient Peruvians.

CALENDAR OF EVENTS *April hours: 9 a.m. to 5 p.m., daily.*

April 5 Film-Lecture Series "East Africa Today," by Arthur C. Twomey. 2:30 p.m. in the James Simpson Theatre. Admission to the Film-Lecture Series is free.

April 12 "Museum Traveler Day" opens Field Museum's Saturday Morning Film Program for Children at 10:30 a.m. in the James Simpson Theatre. Before the showing of a color motion picture, "High in the Himalayas," the opening program will feature an awards ceremony for successful participants in the Museum's Journey Program, sponsored by the Raymond Foundation. Admission is free.

April 12 Film-Lecture Series "It's a Small World," by Fran William Hall, reveals the lives of some of nature's smallest creatures. 2:30 p.m. in the James Simpson Theatre.

April 13 Audubon Wildlife Film Series "Wild Rivers of North America," by John D. Bulger. Over 60 kinds of wild animals are shown in this film journey down unspoiled, scenic rivers. Presented by the Illinois Audubon Society and shown free at 2:30 p.m. in the James Simpson Theatre.

April 13 A spring group of five lectures by Museum Curators will close the Museum's 75th Anniversary Lecture Series, "Earth, Life and Man." "Are There Whales That Nobody Knows?" by Dr. Joseph C. Moore, Curator of Mammals, will open the spring group of lectures. 2:30 p.m. in the Lecture Hall. Admission is free to Members and other interested adults.

April 19–June 15 "The Wind In My Hands" Field Museum's special temporary exhibit for spring displays colorful kites of every size and shape and representing many areas of the world. No admission charge. Hall 9 Gallery.

April 19 Saturday Morning Film Program for Children "The Florida Everglades," in color, will be shown at 10:30 a.m. in the James Simpson Theatre. Admission is free.

April 19 Film-Lecture Series "Discovering New Zealand," by Kenneth Richter. 2:30 p.m. in the James Simpson Theatre.

April 20 "Earth, Life and Man" Lecture series "Primitive Art in Melanesia—New Ireland," by Dr. Phillip Lewis, Curator of Primitive Art and Melanesian Ethnology. 2:30 p.m. in the Lecture Hall.

April 26 Saturday Morning Film Program for Children "Cub Scout Day" color film offering is "Wonders of the World," which explores bird, plant and insect life. 10:30 a.m. in the James Simpson Theatre.

April 26 Film-Lecture Series "Czechoslovakia," by Richard Linde. 2:30 p.m. in the James Simpson Theatre.

April 27 "Earth, Life and Man" Lecture Series "Searching for Fossil Mammals in Australia," by Dr. William Turnbull, Associate Curator of Fossil Mammals, continues the 75th Anniversary Curator lecture series. 2:30 p.m. in the Lecture Hall.

May 3 Latin Day A special program will be held for outstanding Latin students from Chicago area schools. Sponsored by the Illinois Classical Society. In the James Simpson Theatre.

May 4 "Earth, Life and Man" Lecture Series "Land Life of Fishes," by Dr. Karel Liem, Assistant Curator of Vertebrate Anatomy, continues the 75th Anniversary lecture series. 2:30 p.m. in the Lecture Hall.

May 11 "Earth, Life and Man" Lecture Series is concluded with "Museum Research and the Ancient Civilizations of Peru," by Dr. Donald Collier, Chief Curator of Anthropology. 2:30 p.m. in the Lecture Hall.

May 16 Members' Night A preview of the Museum's 75th Anniversary Exhibit will highlight the evening. The scientific departments on the third floor will be open, with special displays reflecting the many areas of Museum research. A film and other entertainment will round out this yearly event.

Commonly regarded as "just a weed," the dandelion is actually a useful plant. It is one of many plants included in the Spring Journey, "Plants of Illinois," sponsored free for children by the Raymond Foundation.

May 17 The 75th Anniversary Exhibit opens. Its triple theme—"A Sense of Wonder," "A Sense of History," and "A Sense of Discovery"—reflects the philosophy and goals of the Museum as well as the history of its growth.

Through April Spring Journey: "Plants of Illinois" Do-It-Yourself tour for boys and girls concentrates upon both common and unusual plants found in the state. Any child who can read and write may participate in the free program sponsored by the Raymond Foundation. Information and Journey Sheets are available at Museum entrances.

MEETINGS

Illinois Audubon Society,
April 2, 7 p.m.

Nature Camera Club of Chicago,
April 8, 7:45 p.m.

Chicago Mountaineering Club,
April 10, 8 p.m.

Chicago Shell Club,
April 13, 2 p.m.

Illinois Orchid Society,
April 20, 2 p.m.

FIELD MUSEUM
OF NATURAL HISTORY
ROOSEVELT ROAD AT LAKE SHORE DRIVE
CHICAGO, ILLINOIS 60605 A.C. 312, 922-9410
FOUNDED BY MARSHALL FIELD, 1893
E. Leland Webber, Director
BULLETIN
Edward G. Nash, Managing Editor

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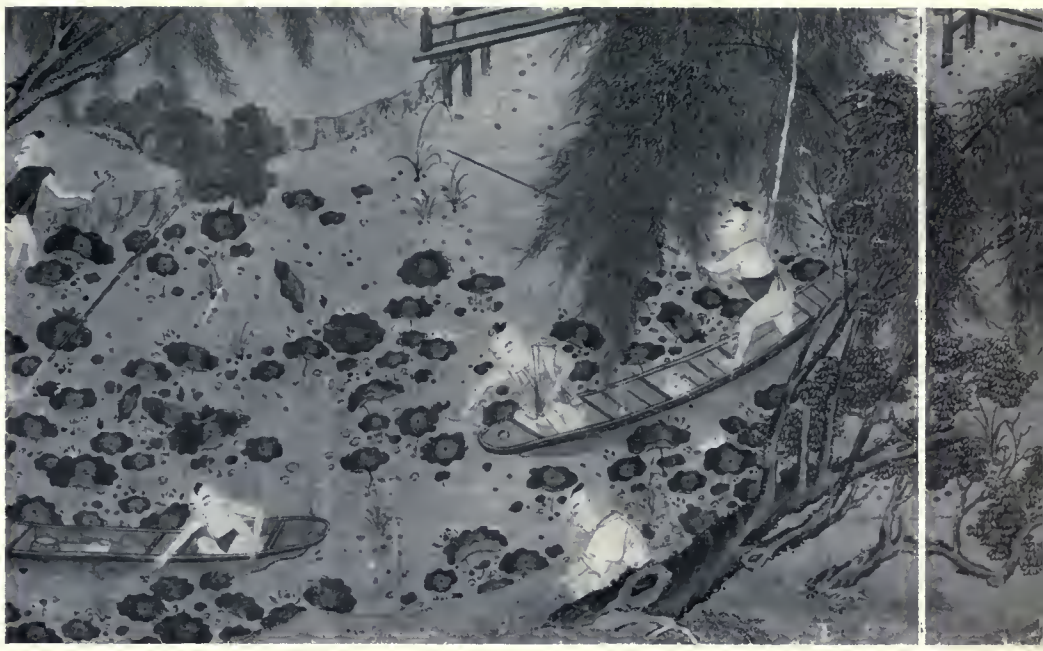

BULLETIN **FIELD MUSEUM OF NATURAL HISTORY**

Volume 40, Number 5 May 1969

Cantering into the Twentieth Century on this month's cover is Elmer S. Riggs, a paleontologist at Field Museum for more than forty years until his retirement in 1942. The photo was taken on the Field Columbian Museum Expedition to Wyoming and Colorado in 1899–1900. Riggs brought back some 5 tons of paleontological material from the Freezeout Mountains of Wyoming. He died in 1963 at the age of 94, and would this year have celebrated his centennial as we are celebrating our 75th Anniversary.

Any anniversary, personal or institutional, produces mixed feelings. Relief, celebration, re-examination of goals, brave new resolutions, all take part. Certainly, this has been the case here at Field Museum. Committees have met, long discussions and arguments about the identity and purpose of the organization have marked the past year or so. Nor is this surprising. A Museum of the size and scope of Field Museum operates on very many different levels, with different goals and at different intensities.

In a sense, all of us here at Field Museum are up on that horse with Dr. Riggs. After seventy-five years, the gait has increased to a near-gallop; our banner flaps in the breeze; we move forward. That there is some occasional conversation among us as to what constitutes "forward" is a healthy sign of the diversity and intellectual vigor of this great institution.

In the following pages, Donald Collier, Chief Curator, Anthropology, tells of the birth of Field Museum. Further on, Ernest Roscoe of the Raymond Foundation writes about the early years of the great Illinois naturalist John Wesley Powell, who, like Lincoln, was born in another state, grew to manhood in Illinois, and achieved his final greatness in his nation's service.

The photo on our back cover is courtesy of the *Chicago Tribune*.

The Ferris Wheel, the greatest engineering feat of the Exposition. Standing 270 feet high, it carried 36 coaches, each capable of holding 60 people. A revolution took 20 minutes. It was an exceedingly popular attraction and, even though it cost $362,000, proved to be a money-maker for its owners as well as for the Exposition. Towering above the Midway, it was the first structure visible to arriving Fair visitors, the last one they could see as they went home, and was a symbol of the Exposition to many people.

The first public proposal to hold a Columbian World's Fair in Chicago was made by Dr. A. W. Harlan, a Chicago dentist, in a letter to a Chicago newspaper, February 16, 1882. During the next few years several similar proposals were made but no action was taken until a group of prominent citizens met in July 1888 and resolved to promote a "World's Fair in the City of Chicago to commemorate the discovery of America by Christopher Columbus four hundred years ago." They appointed a committee to formulate plans.

Chicago by this time had recovered from the Great Fire of 1871, had a million inhabitants, and was growing prosperous as a railway hub, a trading and manufacturing center, and "hog slaughterer to the world." Some of her citi-

Bird's eye view of the Columbian Exposition, 1893. (Rand, McNally & Co., 1898). The Ferris Wheel may be seen in the background, on the Midway. The very large building in the foreground is the Manufactures and Liberal Arts Building. An elevated railway circled the grounds and there was a moving sidewalk on the pier jutting into the lake (left foreground). Of all the hundreds of structures and attractions, little remains today. The Fine Arts Building (far right) became the Field Columbian Museum and is today the Museum of Science and Industry. The lagoon and wooded island and a gilded replica of the Statue of The Republic remain in Jackson Park.

Chicago Comes of Age

The World's Columbian Exposition and The Birth of Field Museum

By Donald Collier
Chief Curator, Anthropology

zens were beginning to look beyond the prairies to the wider world. This turning outward and the desire to bring the wonders of the world to Chicago were stimulated by the Centennial Exposition in Philadelphia in 1876, the International Exposition in Paris in 1878, and by the ambitious plans for the Universal Exposition to be held in Paris the following year.

On July 22, 1889, Chicago's Mayor DeWitt C. Cregier appointed a committee to organize and promote the Exposition. A company, "The World's Columbian Exposition of 1892," was formed and chartered by the State of Illinois. Within two months $5,000,000 was pledged on stock issued by the company.[1] By this time, New York, Washington, and St. Louis were also competing to hold the Fair, and the four cities laid their claims before Congress. After three months of debate in committees and on the floors of the House and the Senate, Chicago won out. On April 25, 1890, the Congress passed "An Act to provide for celebrating the 400th anniversary of the discovery of America by Christopher Columbus, by holding an International Exposition of Arts, Industries and Manufactures, and products of the soil, mine and sea, in the City of Chicago." The act set May 1, 1893, as the opening date, although providing for dedication of the Exposition in October, 1892, and authorized $1,500,000 for the United States exhibit.

The first public appeal for extensive anthropological exhibits at the Exposition, which would serve as the nucleus

[1] By April, 1890, the subscriptions exceeded $10,000,000.

for a permanent museum, was made by Frederick W. Putnam in a communication to a Chicago newspaper on May 31, 1890. Putnam was Curator of the Peabody Museum and Professor of Anthropology at Harvard University. He believed that the Fair offered a great opportunity to secure and display "a perfect ethnographical exhibition of the past and present peoples of America and thus make an important contribution to science, which at the time will be appropriate, as it will be the first bringing together on a grand scale of representatives of the peoples who were living on the continent when it was discovered by Columbus . . ."

Professor Putnam's proposals for the Fair, although favorably received by the Fair Directors, did not rouse universal enthusiasm. A leading Chicago newspaper vigorously attacked the plan on September 16.

> If such an exhibition as this is needed it can be amply provided for from the collection of the Smithsonian Institution. If the archaeological enthusiasts think that the public has a wild, yearning desire to see skeletons from the glacial gravels or detritus from cave floors and shell heaps, let them spend their own money. The directors have no money to waste on the man of the ice sheet or stone monstrosities from serpent mounds—Prof. Putnam, like all these dried-up prehistoric specialists, mistakes the purpose of the Fair. The directors could easily waste five times the amount of money they have if they were to listen to the specialists.

In spite of the opposition of several Chicago newspapers, Putnam successfully campaigned for his ideas in speeches and press interviews. On February 5, 1891, he was appointed Chief of the Department of Ethnology (Department M). He made Franz Boas, then professor at Clark University, his chief assistant and head of the Section on Physical Anthropology, and George A. Dorsey, one of his students at Harvard, head of the Section on Archaeology. He then plunged into the organizing of the most extensive anthropology exhibit of its kind ever assembled. He was also responsible for securing most of the natural history exhibits at the Fair, including the great exhibition of Ward's Natural Science Establishment.

During the ensuing two years, Putnam, Boas and their assistants carried out an unprecedented program of excavation, collecting, and research that extended from Alaska and Greenland to Tierra del Fuego. Altogether, about a hundred persons were engaged in these activities. They included nearly all the anthropology students at Clark and Harvard, established ethnologists and archaeologists, government officials, missionaries, and army and navy officers. Boas organized a program of physical anthropology that collected skeletal material from both hemispheres and gathered anthropometric data from various Indian tribes, as well of measurements of children of various races from the United States, Canada, Hawaii, and Japan. These data were organized in diagrams and charts for display in the physical anthropology laboratory at the Exposition.

Warren K. Moorehead excavated in 1891-92 the Hopewell site situated on the Hopewell Farm in Grant County, Ohio. This is the type site for the Hopewell culture. Material from this excavation forms an important display in the Field Museum today. George Dorsey spent most of 1891 and 1892 in South America excavating and collecting archaeological and ethnographic material in Colombia, Ecuador, Peru, Bolivia, and Chile. Lt. George Welles, Jr., was dispatched up the Orinoco River and was the first North American to ascend to near its headwaters. He brought back an ethnographic collection from the tribes encountered along the river. Lt. Robert E. Peary was commissioned to make an ethnographic collection among the Eskimos of North Greenland. More than $100,000 was spent on this program of excavation and field collecting of specimens and data.

Frederick W. Putnam, Curator of the Peabody Museum and Professor of Anthropology, Harvard University, was a prime mover in the development of anthropological exhibits at the Exposition.

Edward E. Ayer (1841–1927), a founder and the first president of Field Museum. A prominent and dedicated citizen, Ayer was perhaps the most important civic and intellectual force behind the founding of the Museum.

Emissaries were sent to various countries of the New and Old World to borrow museum and private collections and to encourage the foreign governments represented at the Fair to include anthropological materials in their exhibits. Arrangements were made to bring to Chicago a group of Eskimos and delegations from several Indian tribes to occupy typical villages that were being constructed at the Fair.

On November 28, 1891, in an address before the Commercial Club of Chicago, Putnam again urged the people of Chicago to take advantage of the opportunity afforded by the Exposition to found a great natural history museum. He outlined in detail the administrative organization of the proposed museum, the organization and activities of its scientific departments (Anthropology, Botany, Geology, and Zoology), and the nature of its exhibits. These proposals formed the blueprint of the future museum.

A brief description of the Exposition will give the setting in which Professor Putnam's exhibits were displayed and the atmosphere from which sprang the Field Museum. The Fair grounds covered the whole of Jackson Park on the lake front from 56th Street to 67th Street (553 acres). The Midway from Stony Island Avenue to Cottage Grove (80 acres) was occupied by the Fair concessions, including the "Streets of Cairo" and the 270-foot-high Ferris Wheel, which was opposite the present Social Science building at the University of Chicago. The 20 official Fair buildings were mainly in Neo-Classical or Renaissance style,[2] and reflected not at all the Chicago school of architecture nor the new skyscrapers with steel skeletons that were then being built in the Chicago business district. These buildings, excluding

The Manufactures and Liberal Arts Building, at the time the largest building in the world. The central hall could seat 75,000 people. The central corridor was called "Columbia Avenue" and was lined on both sides with handsome lamp-posts. The building was designed by George M. Post of New York, and was the kind of triumph that led Chicago architect Louis Sullivan to remark that the Exposition set American architecture back 50 years.

the numerous foreign, state and territorial structures, had a total floor area of 6,320,000 square feet (155 acres). The greatest building, Manufactures and Liberal Arts, was the largest structure in the world at the time. It was 1,687 feet long and 787 feet wide, covered 30.47 acres and had 44 acres of floor space. The great central hall, 380 by 1,280 feet, covered 11 acres without a supporting pillar. The domed glass roof 237 feet from the floor was supported by steel-trussed arches spanning 360 feet.

The two-story building of the Department of Ethnology, which was called the Anthropological Building, with the subtitle "Man and His Works," was a modest 255 by 415 feet with 161,000 square feet of exhibit space. Beside it were the native villages and a full-scale model of a prehistoric cliff dwelling in Colorado.

[2]The principal architects are listed in the appendix.

The total cost of the Exposition for landscaping, buildings, and exhibits was close to $34,000,000, the equivalent of about $200,000,000 in 1969 currency. The sources of these funds were the City of Chicago and Exposition Stockholders, 15,500,000; States and Territories, 6,000,000; United States government, 5,371,000; and Foreign governments, 7,000,000.

In spite of the serious financial panic during the summer of 1893, the total attendance at the Exposition from May 1 to October 30 was 20,263,280. The admission fee was 50c. The highest daily attendance was on Chicago Day, October 9, the anniversary of the Chicago Fire, when there were 716,880 paid admissions.

Of the less serious exhibits, one of the most popular was the Streets of Cairo on the Midway where Little Egypt and her sisters demonstrated the *Danse du ventre* (belly dance) to amazed and admiring audiences. There was considerable public criticism of the propriety of these performances. Professor Putnam defended the dance as being ethnographically authentic and commented with the classical relativity of the anthropologist: "What wonderful muscular movements did these dancers make, and how strange did this dance seem to us: but is it not probable that the waltz would seem equally strange to these dusky women of Egypt."

Throughout the summer of 1893 there was agitation for and newspaper promotion of the proposal to found a natural history museum which would incorporate the collections assembled at the Exposition. No concrete action was taken until August 11, when the Board of Directors of the World's Columbian Exposition appointed Harlow N. Higinbotham, President of the Exposition, George R. Davis, Director-General of the World's Columbian Commission, and J. W. Scott, a member of the Board of Directors, to begin organizing the museum. They called a public meeting on August 17, which chose a citizen's committee of nine, including Edward E. Ayer, to work on incorporating the museum. The larger committee chose the name Columbian Museum of Chicago, and selected 65 Incorporators and 15 Trustees. On August 23 the organizing committee made a public announcement of plans and appealed to the exhibitors to postpone plans to disperse their collections until the claims of the Museum could be laid before them.

The Incorporators applied for a state charter on September 16. Only six weeks of the Fair remained. The raising of money to purchase collections and to start the Museum was stalled and the prospects of success were poor. Marshall Field had been asked to give a million dollars to start the fund drive. He had replied, "I don't know anything about a museum and I don't care to know anything about a museum. I'm not going to give you a million dollars."

Edward Ayer, who was chairman of the temporary finance committee, was asked to make one more try with Marshall Field. His effort is best told in Ayer's own words[3]:

The next morning I was in Mr. Field's office when

[3]From Frank E. Lockwood, *The Life of Edward E. Ayer*, pp. 189-190.

he arrived at about half past nine. I said:

"Marshall Field, I want to see you tonight after dinner."

"You can't do it," he replied, "I have a dinner party and shall be late."

"Well, the next night."

"No, I have another engagement then."

"Well, I have to see you right away; it is important."

"You want to talk to me about that darned museum," was his reply to this.

"Yes," I admitted.

"How much time do you want?"

I replied,"If I can't talk you out of a million dollars in fifteen minutes, I'm no good, nor you either."

"He got up, closed the door, came back, and said, "Fire ahead."

I commenced in this way, "Marshall Field, how many men or women twenty-five years of age or younger know that A. T. Stewart ever lived?"

Not one," he replied.

I continued, "Marshall Field, he was a greater merchant than you, or Claflin, or Wanamaker, because he originated and worked out the scheme that made you all rich; *and he is forgotten in twenty-five years.* Now, Marshall Field, you can sell dry goods until Hell freezes over; you can sell it on the ice until that melts; and in twenty-five years you will be just the figure A. T. Stewart is—absolutely forgotten. You have an opportunity here that has been vouchsafed to very few people on earth. From the point of view of natural history you have the privilege of being the educational host to the untold millions of people who will follow us in the Mississippi Valley. There is practically no museum of any kind within five hundred miles; and these children who are growing up in this region by hundreds of thousands haven't the remotest opportunity of learning about the ordinary things they see and talk about and hear about every day of their lives, and it does seem a crime not to provide them with the information they need."

I talked fast and steady. Finally, he took out his watch and said, "You have been here forty-five minutes—you get out of here."

I replied, "Marshall Field, you have been better to me than you ever have been before; you have always said No, and you haven't this time—yet. Now I want you to do me a personal favor: I want you to go through this World's Fair with me and let me show you the amount of material that is there—I mean exactly what there is that can be used in a natural history museum; for the collections can be gotten very cheap, much of the material for nothing. I want you to go through the World's Fair with me before you say No."

"Well, Ed," he replied, "I should like to go through with you. George Pullman told me you had shown him through and that he had been astounded at the quantity of material that was there. My brother Joe is here and I should like to have you go with us. We will do it tomorrow morning at ten o'clock."

We went through the whole exhibition. When we came out a little before one o'clock, I said, "Can Norman Ream and I come to your office tomorrow morning at half-past nine and see you about this matter?"

"Yes," he answered.

We were there promptly, and he gave the million dollars with which to start the Museum.

Within a few days there followed gifts of $100,000 each from George M. Pullman and Harlow Higinbotham, and $50,000 from Mrs. George Sturges. The following month Ayer gave his large collection of ethnographic and archaeological material from North America, which had been exhibited at the Fair and was valued at $100,000. The immediate financial problems of the Museum were solved.

One of the first purchases made from the Exposition exhibits was the collection of Ward's Natural Science Establishment, which was bought for $95,000. It included a large collection of rocks and minerals, skeletons, mastodon bones and other vertebrate and invertebrate fossils, and mounted mammals and birds, including two species of birds from Australia unique in present Field Museum collections.

On November 18 the Trustees determined to assemble the accumulating collections in the Fine Arts Building, which had been built substantially with brick and steel with the idea of making it permanent (only the ornamental facade was of *staff*, a plaster reinforced with fiber). Frederick J. V. Skiff, Chief of the Department of Mines and Mining of the Exposition, was appointed acting director and was charged with organizing the incoming collections and installing them in exhibits. Skiff was vividly described these labors in his address at the dedication of the Museum.[4]

> And now began the tremendous task of gathering the vast amount of material from every part and corner, and stretch and recess of these vast grounds; from all of the buildings, large and small; from the Midway Plaisance and from Wooded Island; from the Forestry Building to the Fisheries Building. Hundreds and hundreds of tons of exhibits, collections and objects of every describable character were transported to this building at which we are assembled. Then the selection, alteration, arrangement and rearrangement and elaboration began. Gradually hall by hall was emptied and as the objects of art left the building; a mass of material poured in, heterogenous and appalling in extent. And the beautiful products of the artist's brush and the sculptor's chisel—ours for only a summer—were supplanted by what we see in these halls today; a sequential and systematic exposition of the wonderful and instructive things of the world we live in began to grow. Through the same door streamed boxes and bales from the Transportation, Mining, Forestry, Electricity, Manufactures and Liberal Arts, and state buildings,

[4]An Historical and Descriptive Account of the Field Columbian Museum, pp. 13-14.

from government buildings and from the Plaisance; objects from the remotest lands and the most diversified climes!

In a reorganization of the Trustees of the Museum on January 22, 1894, Ayer was elected President, Martin A. Ryerson, Vice-President, and Skiff was appointed Director. On May 21, when the new Museum was nearly ready to be opened, the Trustees renamed it the Field Columbian Musuem. On June 2 the Museum was formally opened with a reception and addresses by Director Skiff and Edward G. Mason, President of the Chicago Historical Society. Thus Field Museum was begun.

It is evident that the great exhibits of the Exposition and the ideas and support for the new Museum developed together from 1890 onwards. Putnam was the catalyst, and he focused the anthropological and natural history resources of the country in support of these objectives. The Exposition, beyond the immediate result of the founding of the Field Museum, set a precedent of large-scale, systematic anthropological field work, and crystalized a growing interest, both popular and professional, in the ethnography and antiquities of the New World. The result was that more persons were attracted to the pursuit of anthropology and a great deal of private money was made available to support anthropological and natural science research.

The World's Columbian Exposition advanced American anthropology by a generation. On the other hand, it set back American architecture by a generation and a half.

A view south and west from the top of Manufactures and Liberal Arts. The building to the right is Machinery and, left, the Agricultural Building. Early searchlights like the one shown were used for nighttime illumination and display.

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APPENDIX

Principal Architects of the World's Columbian Exposition

The overall plan of the Fair was made by Daniel Burnham and his partner John W. Root, who died in 1891. Burnham served as Director of Works for the Exposition. Later, he made the basic design for the Field Museum building in Grant Park, although the final plans and working drawings were executed by the Chicago firm of Graham, Anderson, Probst & White, successors to D. H. Burnham & Company.

The dominant architectural influence on the Exposition came from the Beaux Arts school of New York.

The principal architects of the Fair and the buildings they designed were as follows:

Robert M. Hunt, New York, Administration
Jenny & Mundie, Chicago, Horticulture
McKim, Mead & White, New York, Agricultural
Adler & Sullivan, Chicago, Transportation
George M. Post, New York, Manufactures and Liberal Arts
Henry Ives Cobb, Chicago, Fisheries
Burling & Whitehouse, Chicago, Casino (Venetian Village)
Peabody & Stearns, Boston, Machinery
Solon S. Beman, Chicago, Mines & Mining
Van Brunt & Howe, Kansas City, Electricity
Sophia G. Hayden, Boston, Woman's Building
Charles B. Atwood, Chicago, Designer in Chief of the Exposition and designer of the Fine Arts Building

A Sense of Wonder

"Everything made by human hands looks ter
unsymmetrical. But in nature every bit of life i
the more details are brought out, perfectly forr
Ro:
In
The

The amazing firmness and flexibility of this snake's body is the result of its many vertebra, up to 350 individual joints (excluding the tail) each of which can move 25 degrees.

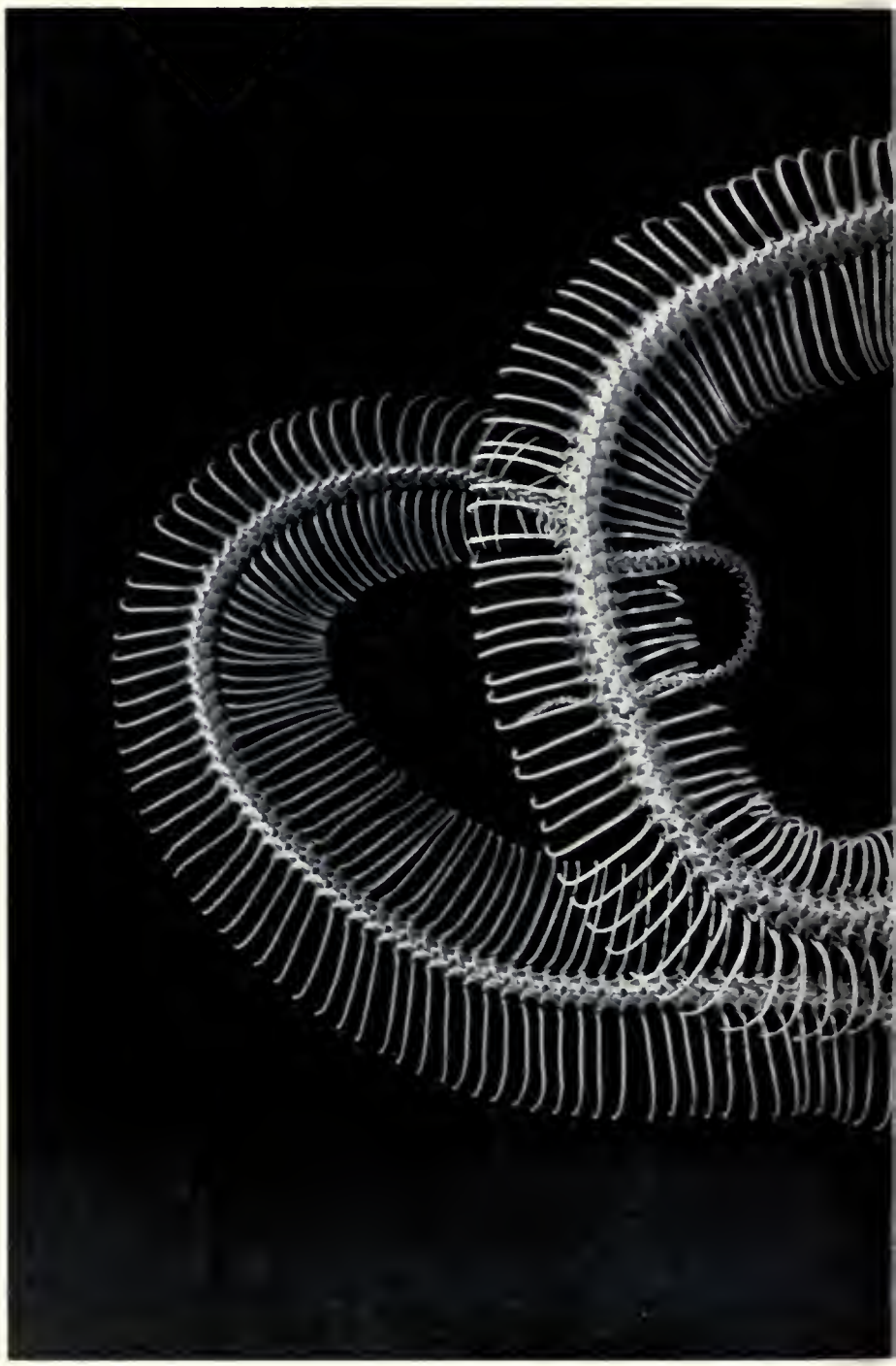
The Indian python is a constrictor whose range includes much of Southeast Asia. It inhabits not only the tropical jungles and forests, where it is an adept tree-climber, but is also at home on rocky mountain slopes and near water.

It is this snake which is used frequently in "snake charmer" acts, where its fierce appearance makes most people wary, if not frightened. A 12-foot snake does not usually appeal to the average citizen as a likely pet, but the Indian python *(Python molurus)* one of the "giant" snakes, is relatively easy to tame.

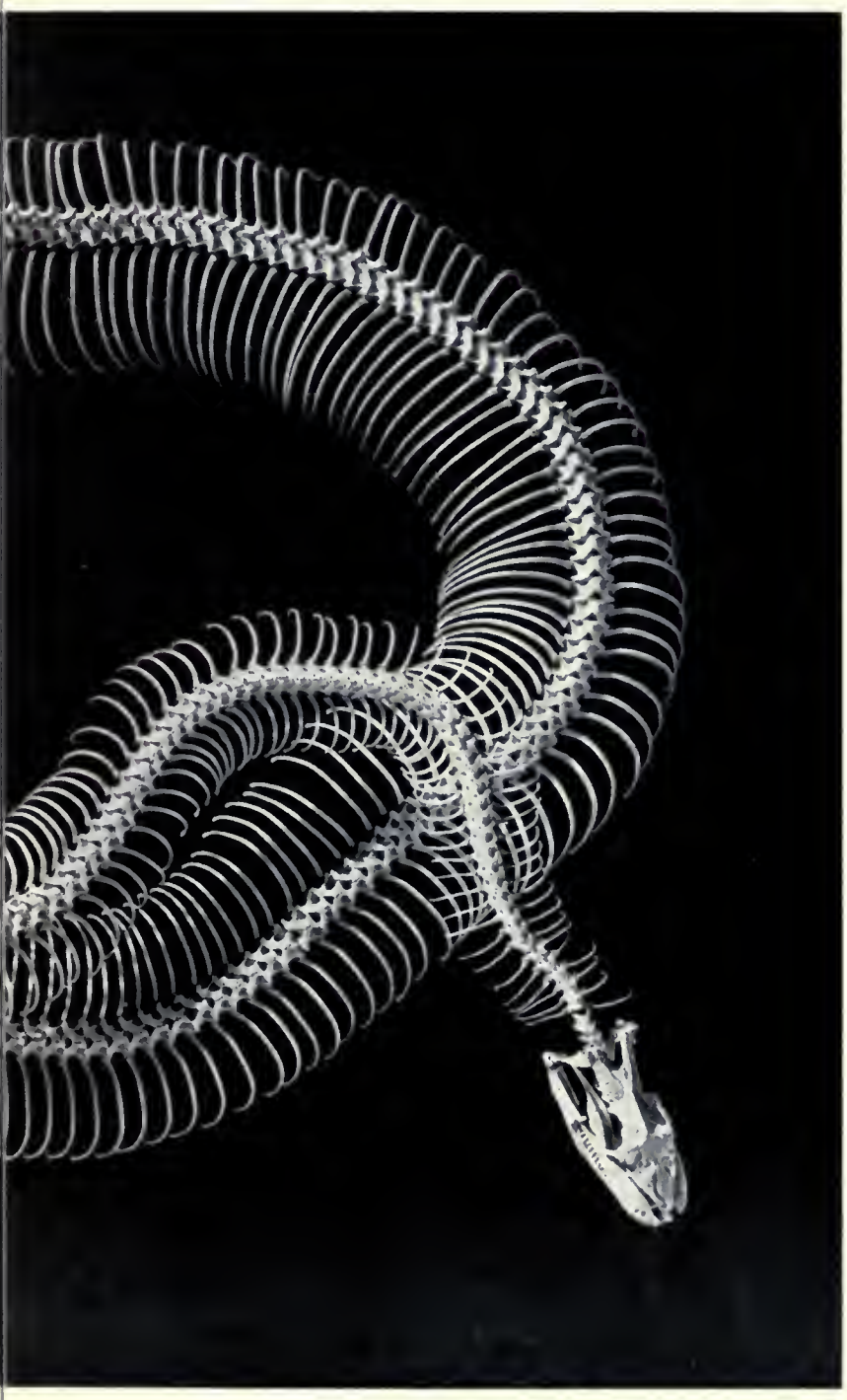
Clifford H. Pope, Research Associate and former Curator of Reptiles and Amphibians, kept an Indian python as a house pet for six years and it spent another eight years as the pet of a lecturer, with whom it traveled to colleges and universities and was handled by hundreds of people, reportedly never biting anyone.

If a python in the wild does decide to bite it can be very damaging, although not poisonous. As constrictors, pythons suffocate their prey, which may include anything from a bird to a leopard or a deer. Bones are seldom broken in the process, although a snake may do this to arrange the prey into a shape it can swallow. While digesting these huge meals they are extremely lethargic and vulnerable to attack.

Even when active, pythons are not especially quick-moving and Pope asserts that a man walking rapidly could easily outdistance most snakes. Their vision is poor and their hearing is not particularly sensitive. In attacking another animal, they seem to rely on a process called "chemoreception," roughly akin to the combination of the senses of taste and smell in man, possible because of



e under magnification—crude, rough, and
vely. And the more magnification we use,
, like endless sets of boxes within boxes."
Vishniac
reas Feininger, *Forms of Nature and Life.*
king Press, Inc., New York, 1966.



In life, the Indian python seems to be a very simply constructed creature. The actual complexity of its anatomy is striking in this skeleton of Python molurus, *one of the items in A Sense of Wonder, part of the 75th Anniversary Exhibit. This specimen is 14 feet, 6 inches long, and was purchased from Ward's Natural Science Establishment shortly after the Museum's founding.* Photo by Homer Holdren.

Jacobsen's organ, an organ in the snake's head which has no counterpart in man. The snake's tongue is essentially an organ which transmits impressions to the Jacobsen's organ.

Snakes are evidently capable of learning some responses, but Pope admits that these animals are very frustrating to test psychologically. As cold-blooded animals their responses are sluggish and their faces are incapable of registering expression, which produces the unending "dead-pan."

Pythons may be active during the day or night and have been encountered in groups of from four to eight individuals by some people. Male pythons are usually smaller than females when full grown, and the snakes range in length from 12 to 15 feet, with a few approaching 20 feet, and weigh from 50 to 100 pounds. Their life spans in captivity range from 10 to 15 years, although some have been reported to live past 20 years.

The young have many enemies but when they are full grown the list of their predators is fairly limited. The main defense of these snakes is concealment and if this seems unlikely for so large a snake, heed Pope's comment that his pet python disappeared in his home and was finally discovered sleeping *inside* a box spring. Coloration helps many snakes to lie hidden in foliage and should a snake be discovered it is sometimes able to "bluff" its way out of danger by making threatening gestures and noises. Usually it must be seriously provoked or very hungry to kill.

Man is the snake's greatest enemy, with other snakes running in second place, since a snake is an appropriately shaped meal for another snake.

Few Openings Remain on Field Museum Tour

Himalayan Kingdoms and Northeastern India

Tour B, January 2 — February 27, 1970

Bhangra dancers demonstrate their unique, traditional dance form.

Field Museum's Tour of Himalayan Kingdoms and Northeastern India has proven so popular that only 12 places remain open for Tour B, January 2–30, 1970, announced last month. Tour A, January 30–February 27, 1970, is completely filled and has a waiting list. Both tours have the same itinerary, visiting Delhi, Jaipur, Agra, Keoladeo Ghana Bird Sanctuary, Fatehpur Sikri, Khajuraho, Benares, Sarnath, Kathmandu, Bhatgoan, Boddnath, Chapgoan, Tiger Tops, Pokhara, Darjeeling and Gangtok. Phil Clark, Field Museum Public Relations Counsel, Chief of Tours, and an expert on plants and gardening, will lead both tours. The tours will be joined by Hari Karan Singh, an Indian expert in Hinduism, at Benares for the remainder of the trip. In Nepal, Dr. Robert Fleming, a Museum Field Associate for more than 30 years, will accompany the tours as a specialist on birds of the area.

Visits to private homes and gardens will be included in the tour in addition to the exciting and well-known religious, historical and natural attractions of the area: the Taj Mahal, the 17th Century Red Fort in Delhi, the Amber Palace and Hawa Mahal in the pink sandstone city of Jaipur, thousand-year-old temples built by Chandella kings to honor their Hindu and Jain gods, a boat ride on the Ganges and a flight to Mount Everest.

The tour is limited to 36 persons (nine elephant loads). Cost of the tour, including a $500 tax-deductible donation to Field Museum, is $2,657. Reservations and additional information are available by writing: Tour of Himalayan Kingdoms and Northeastern India, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605.

Below: *Camels and mules crowd wheeled vehicles in the pink city of Jaipur, where elephants, too, are sometimes part of the traffic picture.*

Khajuraho's amazing sculptures dance, march, play musical instruments, and make love—bringing life and motion to stone.

Major John Wesley Powell,

Illinois Naturalist

By Ernest Roscoe
Raymond Foundation

FOLLOWING the Civil War the last unexplored piece of American real estate was what is now termed the Colorado Plateaus province, roughly southeastern Utah, northeastern Arizona, northwestern New Mexico and southwestern Colorado. Slashing diagonally across this region was the Colorado River;—it was all terra incognita.

We celebrate this month the centennial of the conquest of the Colorado. John Wesley Powell's official account of his "Exploration of the Colorado River of the West and Its Tributaries," published in 1875, is one of the great adventure stories of all time. An engaging glimpse of this book was presented by Mr. W. Peyton Fawcett in the March BULLETIN. The Colorado has been run many times since, in all sorts of craft, upstream and down, at all stages of water. It is probably now safer than crossing Michigan Avenue during rush-hour traffic, but the thrill and wonder of the Canyon Country is still there, as those lucky participants in the Museum's September Natural History Tour will discover for themselves.

But it is not with the story of Powell's expedition that I am concerned here. The conquest of the Colorado River was only part of a brilliant career for Powell which had its beginnings in Illinois. The Major, as he was addressed by most familiars, was later to play a dominant role in the consolidation of the government's western surveys into the U. S. Geological Survey; to become its second Director; to organize and become the first Chief of the Smithsonian's Bureau of Ethnology; and directly or indirectly guide much of the fundamental policy of a host of federal agencies which were established in Washington during this period. In the twenty years following the Civil War, Washington became one of the great scientific centers of the world, and it is generally conceded that no man wielded more influence or power in that center than Powell.

Powell was born in Mount Morris, New York, in 1834; his father was a circuit-riding Methodist preacher who was imbued with the idea of bringing religion to those beyond its normal reach on the frontier. The Powell family consequently kept moving westward—Ohio, Wisconsin, and finally Illinois.

Young Powell's formal education was of a frontier type, by modern standards pretty haphazard. If such an education had its weaknesses, it also had its strengths. It gave young Wes, says Stegner, "independence, confidence, the practical ability to accomplish things that many better-trained men lacked. He did not know enough to be discouraged." The Civil War was to add the final touch—a taste for leadership and lessons in organization and command of large numbers of men.

John Wesley Powell in 1859, as first secretary of the newly-formed Illinois State Natural History Society and its Curator of Conchology. He had amassed an impressive collection of river shells at this time.
(Photo from *Powell of the Colorado*)

The Chief of the Paiutes talks with Major Powell in Colorado during the 1870s. Powell was interested in ethnology and anthropology, as he was in nearly every branch of natural history. (Photo by F. S. Dellenbaugh; from *The Scientific Monthly*, Vol. 15, 1934.)

Whatever estimates of Powell as a scientist may be, it is clear that he was a Naturalist in the best and most comprehensive sense of that term. His interests, even as a youngster, were far ranging, from minerals to prehistoric man. In a day when people lived close to nature, and a person versed in nature lore was respected, local Illinois legend, says Darrah, "endowed Powell with phenomenal knowledge and fantastic skills as a naturalist."

As a lad of 8 or 9, Wes came under the tutelage of one George Crookham, another self-taught individual, regarded as one of the most learned men of Jackson County, Ohio. Crookham's instruction included conducted field trips through the countryside, introducing his students to the elements of geology, archaeology, and other aspects of natural history. Powell also often accompanied Crookham and William Mather, later first state geologist of Ohio, on their field trips. It is significant in this regard to note that Powell is credited as the first professor to employ student field trips as an adjunct to formal classroom lecturing, a technique quickly picked up by Yale, Princeton, and other leading universities.

Powell's museum experience also began in his early youth, again apparently an influence from Crookham. At the age of 12 Wes had begun his own museum in Wisconsin, which included material from the Indian mounds of the southern part of the state, as well as insects, flowers, shells, and other natural history objects.

By the early 1850's the Powell family had settled in northern Illinois on a 320-acre farm on Bonus Prairie, Boone County. Wes, now in his late teens, began acquiring his "higher" education at Illinois College, Illinois Institute, and Oberlin College, sandwiched between various teaching jobs. Powell never earned a college degree. It was at this time that his attention was focused on the molluscan fauna of Illinois and adjacent territory. He had already collected abundant material from the Great Lakes and the smaller lakes of Wisconsin. Now he made a speciality of river shells from the Mississippi and most of the streams of Illinois, Iowa, Missouri, and Indiana.

At the 8th annual State Agriculture Society Fair, held at Jacksonville, Illinois in September 1860, Powell's collection of mollusks won a prize of $25 as the "Best collection illustrating the Zoology of Illinois." With this money Powell bought a ticket to Detroit to visit Emma Dean. After their marriage, Emma was to be an almost constant companion on his field trips. On a student expedition to the west she would become the first woman to climb Pike's Peak. By special dispensation from General Grant, Emma was permitted to accompany Powell throughout his Civil War duty.

Major John Wesley Powell in 1869, after his successful Colorado River expedition.

Expedition party repairing boats at First Granite Gorge, Grand Canyon. (Photo from *Powell of the Colorado* by William Culp Darrah.)

Shortly after the organization of the Illinois State Natural History Society in 1858, Powell was elected its first secretary and Curator of Conchology, a purely voluntary and unpaid position. Powell was, so far as I can determine, the first to bear this title at any institution in Illinois, although there had been general curators before that date.

Responding to President Lincoln's call for volunteers in May 1861, Powell was sworn in as a private, Company H, Twentieth Illinois Volunteer Infantry, relinquishing his position of superintendent of schools in Hennepin. Official U. S. War Department records include this pertinent data —"Age 27, height 5′ 6½″ tall, light complected, gray eyes, auburn hair, occupation teacher." Within a few days his comrades had elected him to sergeant major, and within a month he had been promoted to the rank of second lieutenant. By October he had become an acting captain of artillery. Taking a short leave of absence, Powell married Emma in Detroit on November 28. The young couple immediately left for Chicago and then on to Cape Girardeau, Missouri, where Powell was stationed.

Pittsburg Landing, Tennessee, April 6, 1862. Captain Powell raises his right arm to signal "Fire." "As the hand went up," Darrah relates, "a half-spent minié-ball struck the wrist, glanced toward the elbow, and buried itself in the flesh." Later an amputation was performed, which would leave Powell without most of his right arm. Although never without pain from that time on, he returned to active duty, was promoted to the rank of major, and participated in the seige of Vicksburg.

Neither the loss of an arm nor his military duties lessened Powell's interest in natural history nor entirely circumscribed his field work. As his men dug trenches near Vicksburg they uncovered numbers of fossil invertebrates. These were collected by the Major and Emma, each specimen carefully wrapped in cotton, and mailed to his parents' home in Wheaton for safekeeping.

After the war Powell accepted a position as Professor of Geology at Wesleyan University in Bloomington, and in 1866 a similar position at nearby Normal, which he was to hold until coming to Washington in the early 1870's. The collections of the Natural History Society at this time were displayed in the museum rooms on the top floor of the college building, but adequate funds for maintaining them were not available. Powell went to work persuading the faculty members to recognize the value of the collections and convincing the administration of the prestige and public recognition which would accrue from a properly maintained museum. The three institutions involved, the Natural History Society, the universities at Normal and Wesleyan, agreed to send Powell to Springfield to plead for a small endowment for the museum at State Normal.

Stegner remarks that "Considering his later successes as an imaginative and tenacious Bureau head in Washington, his success in this, his first minor local piece of promotion, seems a trivial thing. Yet, his campaign in 1866–67 was brilliantly conducted. and it showed for the first time the politician and promoter superimposed upon the earnest amateur naturalist. He was a finished performer as he ap-

Major Powell and a Paiute Indian, 1873. (Photo from *Powell of the Colorado.*)

Marble Canyon, Arizona. In the foreground is the Emma Dean *showing the armchair in which Major Powell sat.* (Photo from *Powell of the Colorado.*)

peared before the legislature in Springfield. . . . The whole operation was small, but the only thing that was minor-league about it was the modesty of Powell's requests. He would learn to ask for more later, but he would never improve upon his performance as a promoter."

What Powell got at Springfield was authorization of $1500 a year for the salary of the curator, plus an additional $1000 a year for the maintenance of the collections. Back in Bloomington with these prizes Powell was promptly appointed to the now-salaried curatorship. Almost casually he told the Board of the dream he had of taking an expedition of students and naturalists to the Rocky Mountains, where science had made only the barest beginnings and where a museum's collections could be quickly enriched. He emerged from this meeting with the promise that half of the new maintenance fund of the museum could be devoted to support the expedition.

Space will not permit an account of the two student expeditions to the west, nor of the more famous Colorado River Expedition of 1869. Regarding the latter, it may be noted here that Powell received no federal support aside from the permission from his ex-commander, President Grant, to draw upon Army stores. The 1869 expedition was financed primarily by several Illinois private institutions.

Powell was one of my childhood heroes. One of my biggest thrills as an embryo naturalist came on a field trip to the Cave Lakes Canyon near Knab, Utah in 1946. On a bitter cold day in early March of that year, I ran across an inscription carved into the sandstone on the side of one cave. It read: C.(olorado) R.(iver) Ex.(pedition), F. S. Dellenbaugh." The thrill of running my numb fingers over those still distinct words made it possible to forget all the discomforts of the day. Dellenbaugh's account of his experiences with the second Powell expedition still makes fascinating reading.

It was characteristic of Powell that his contributions to science should not end with his death in 1902. He willed his brain to science, and a paper on it was published by Edward A. Spitza in 1903.

There is no doubt that John Wesley Powell should be regarded as one of the pioneer naturalists of Illinois. In a wider view, Powell still stands as a shining example of the American dream, of what the self-made man may accomplish with honest, steady adherence to a definite purpose. "It must have been some satisfaction," Stegner remarks, "to provide ideas for the nation's great men, and play politics for stakes vital to two-fifths of the United States, and have the ear of Presidents. A self-taught Illinois school teacher could have done worse."

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The article is based on a paper presented by the author at the 28th Annual Meeting of the American Malacological Union, Washington, D. C., June 20, 1961.

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Stegner, Wallace. 1954. Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West. Houghton Mifflin Co., N. Y.

CALENDAR OF EVENTS *May hours: 9 a.m. to 5 p.m. daily.*

May 3 LATIN DAY A special program will be held for outstanding Latin students from Chicago area schools. Sponsored by the Illinois Classical Society. James Simpson Theatre.

May 4 "Earth, Life and Man" Curator Lecture Series "LAND LIFE OF FISHES," by Dr. Karel Liem, Assistant Curator of Vertebrate Anatomy, continues the 75th Anniversary Lecture Series. 2:30 p.m. in the Lecture Hall.

May 5 – 29 CANYON COUNTRY The special program marks the centennial of the Powell Colorado River Expedition. Open to all school and other interested groups, the program consists of a film and a self-directed tour, both highlighting the natural history of the Southwest. Advance reservation is required. The free program begins at 12:30 p.m., Mondays through Fridays, in the James Simpson Theatre. Reservations are being accepted by the Raymond Foundation, Field Museum's educational department.

May 9 ANNUAL SPRING HAT PARADE A program featuring hats made in millinery classes conducted by the Chicago Park District begins at 1:30 p.m. in the James Simpson Theatre. Sponsored free of charge by the Chicago Park District.

May 11 "Earth, Life and Man" Lecture Series "MUSEUM RESEARCH AND THE ANCIENT CIVILIZATIONS OF PERU," by Dr. Donald Collier, Chief Curator of Anthropology, closes the 75th Anniversary Lecture Series. These lectures are designed to acquaint the public with Field Museum's research efforts and broaden awareness and appreciation of the nature of man's environment.

May 16 MEMBERS' NIGHT The annual event includes "open house" in the scientific departments and research areas of the Museum, including many special displays. A highlight of the evening will be a preview of the 75th Anniversary Exhibit.

May 17 Field Museum's **75th** ANNIVERSARY EXHIBIT—A Sense of Wonder, A Sense of History, A Sense of Discovery—opens to the public. The free exhibit presents the history of the Museum from its founding in 1893 to its present wide scope of research and educational activities. Emphasis is placed on scientific efforts of staff members over the past three-quarters of a century. Hall 3, through November 16.

May 24 CHICAGO AREA SCIENCE FAIR A one-day event sponsored by the Chicago Area Science Teachers Association includes displays of original research projects by students attending private, public and parochial schools in the Chicago area. Awards will be given at the close of the Fair for the best projects in the areas of study represented, including astronomy, biology, chemistry, geology and general science. Stanley Field Hall.

Through June 15 "THE WIND IN MY HANDS" Temporary exhibit devoted to the art, science and fun of kites. The free exhibit traces the history of kites, examples of antique and contemporary kite-flying equipment and many excellent photographs. Hall 9 Gallery.

Through May Spring Journey "PLANTS OF ILLINOIS" Do-it-yourself tour for boys and girls introduces both common and uncommon plants found in the state and interesting facts about them. Any child who can read and write may participate in the free program sponsored by the Raymond Foundation. Information and Journey Sheets are available at Museum entrances.

MEETINGS:

CHICAGO SHELL CLUB, May 4, 2 p.m.
ILLINOIS ORCHID SOCIETY, May 18, 2 p.m.
ILLINOIS AUDUBON SOCIETY, June 4, 7 p.m.
CHICAGO SHELL CLUB, June 8, 2 p.m.
NATURE CAMERA CLUB OF CHICAGO, June 10, 7:45 p.m.
CHICAGO MOUNTAINEERING CLUB, June 12, 8 p.m.

LeBus Trust Gift Benefits Library, Other Programs

Field Museum has received $5,000 from the Bertha LeBus Charitable Trust for the support of Museum activities. Of this amount, $2,000 is designated for the purchase of library books during 1969. Volumes will be selected by the Library Committee and an appropriate plate will be placed in each book naming the Bertha LeBus Trust as the donor. The gift has made possible the purchase of books unavailable to the Museum otherwise because of budget limitations.

The remaining $3,000 has been provided to help support the Museum's scientific publishing program which, in the monographic series *Fieldiana*, produces some twelve to fifteen hundred pages a year. Also aided is the rapidly expanding educational effort with graduate and undergraduate students in the natural sciences and Anthropology.

"TREASURE OF THE MONTH" A Tsimshian bark shredder from Ankedar Village in British Columbia is on display in the Museum's North Lounge. This beautifully crafted wooden implement was collected in 1921 by George T. Emmons. Tools of this type were used to separate and soften cedar bark fibers so that they could be woven into mats, blankets and articles of clothing. The "treasures" are intended to emphasize single outstanding specimens from the Museum's many collections. The display is changed periodically.

Beginning June 1 Summer Journey "INSECTS" Any child who can read and write may participate in the Raymond Foundation's free Journey Program.

FIELD MUSEUM
OF NATURAL HISTORY
ROOSEVELT ROAD AT LAKE SHORE DRIVE
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E. Leland Webber, Director
BULLETIN
Edward G. Nash, Managing Editor

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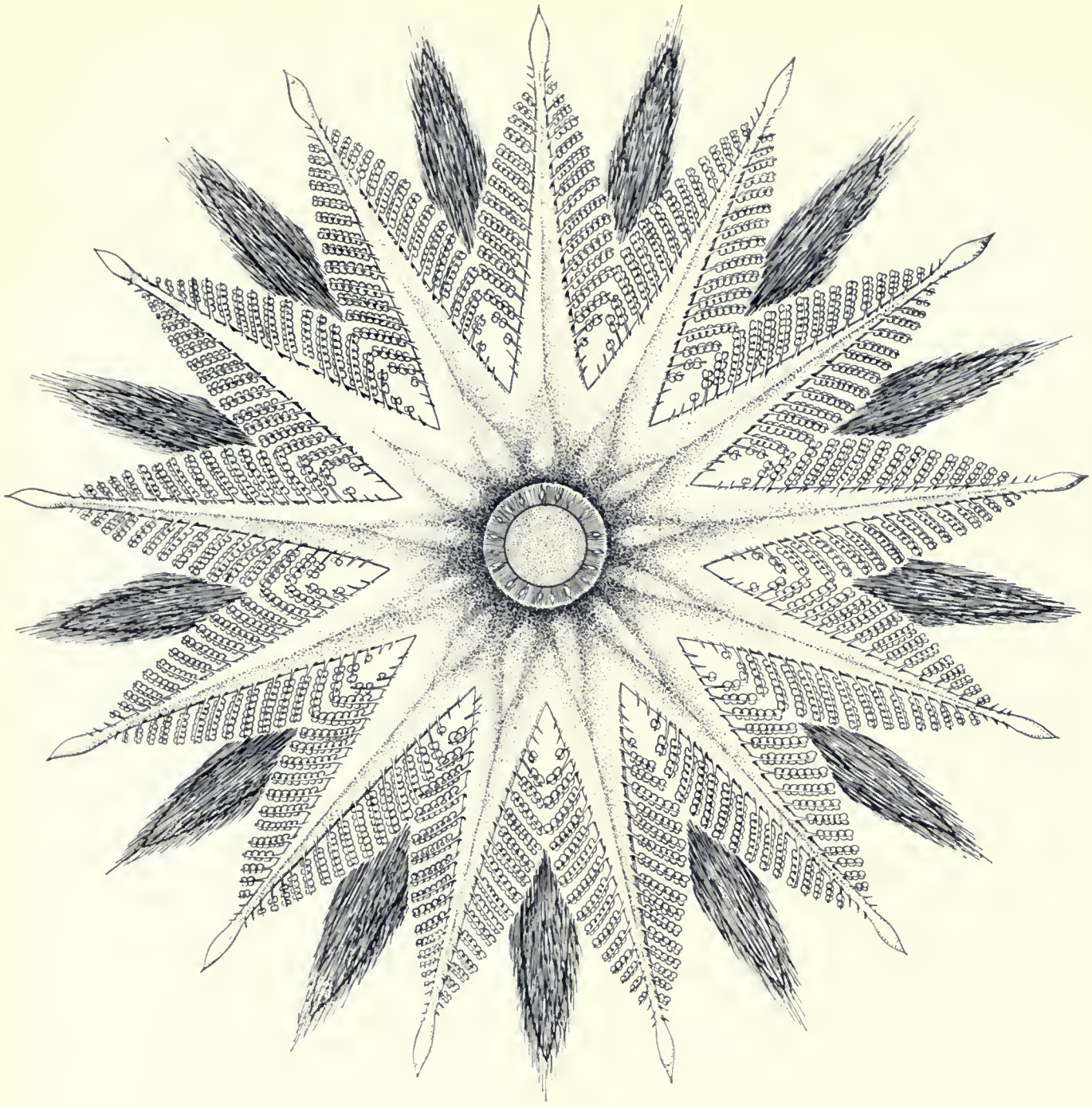

Did this flower ever bloom?

BULLETIN **FIELD MUSEUM OF NATURAL HISTORY**

Volume 40, Number 6 June 1969

THIS MONTH'S COVER SHOWS A TOP VIEW OF THE OPENED FLOWER OF CYCADEOIDEA INGENS AS INTERPRETED BY WIELAND. (DRAWING BY ARTIST-PREPARATOR SAMUEL H. GROVE FROM A PLATE IN FOSSIL AMERICAN CYCADS BY G. R. WIELAND.)

The unlikely-looking object next to Bill Burger in the photo at right is made of wood, wax, plastic, time, sweat, and a generous dash of irony. The first cycad flower, of glass, was assembled by John Millar in 1923. Millar, later Deputy Director, Chief Curator of Botany and Field Museum's first Chief of Exhibition, is now retired, although, after fifty years of service, he maintains an office in the Museum, the "Center for Omphaloskepsis" as the sign on his door identifies it. That flower, and many other models made by Millar, are still on display in Hall 29.

Sometime in the early thirties, it was decided to reconstruct the entire cycad plant. Various Curators of Botany did research on it and gave advice. Emil Sella, and Frank Boryca of the Stanley Field Plant Reproduction Laboratory modeled parts, made molds, and dies and cast the parts of the plant. Sam Grove, the artist-preparator who drew this month's cover, assembled and painted much of it. The cycad was never very high on our list of priorities, and it was worked on a bit at a time, now and then. Eventually, some twenty-five years after work was begun, the model was finished. Even then, the plant did not go on exhibit. While it was being decided how and where to exhibit the cycad, along came a new explanation of how this fossil plant worked.

At long last, in our Seventy-fifth Anniversary Exhibit, in the section called "A Sense of Discovery", the cycad model is displayed. We have, we believe, transmuted the irony of the flower that may or may not have bloomed into the gold of an exhibit that symbolizes how science moves forward, by constant reassessment and reinterpretation of what we know, and by the integration of new data with old.

On the next page, Dr. Burger discusses *Cycadeoidea,* and on the following page, Sam Grove's drawings illustrate the various interpretations of the flower. Elsewhere in this issue, a profile of vertebrate anatomist Karel Liem, and a photo story about a very pleasant lunch hour.

William Burger, Assistant Curator of Vascular Plants, examines the full-sized model of Cycadeoidea, *as interpreted by Wieland, who suggested that the flowers did bloom. The model is shown installed as part of the Museum's 75th Anniversary Exhibit.*

CYCADEOIDEA

Did this flower ever bloom?

BY WILLIAM BURGER
ASSISTANT CURATOR
AND
RONALD LIESNER
ASSISTANT IN BOTANY

One of the most interesting plant models to be built at Field Museum is our restoration of the fossil plant, *Cycadeoidea ingens*. The model was begun with a glass and wax flower constructed in the early 1920's with the help of the late Prof. George Wieland of Yale University. In the 1930's a complete restoration was begun using steel dies and plastic. The plant model was completed in the 1950's.

These plants lived during the Mesozoic period, 100 million years ago, when the reptiles ruled the earth. Today they are only known as fossil leaves and trunks. As indicated by the name *Cycadeoidea* they were related to the living cycads, palm-like relatives of the conifers. The fossils were first examined intensively by Prof. Wieland who published a monograph of these ancient plants and their close relatives in 1906 and 1908.

The methods of preparing fossils for study at that time were quite tedious. To see the fine structures, preserved as silica, required making a thin slice with a diamond saw. This, of course, could not be made too thin as the rock might shatter. This slice was then carefully ground down until it was thin enough that some light could pass through it. In this way the internal structure of the fossil could be seen.

The reproductive structures ("flowers") are found partly imbedded in some fossil trunks. The female parts were borne on a cone-like structure in the center of the flower. The male parts were borne in sac-like structures around the central cone. Wieland thought that these sac-like structures were immature and would eventually open outward like the leaf of a fern. This interpretation is based on the fact that open mature flowers are less likely to have been preserved. Also, flowers of related fossil plants did open in this way and have been found as compressions. Open flowers of *Cycadeoidea* have never been found.

In 1963 Dr. Theodore Delevoryas, also of Yale and working with the same fossil material, came to very different conclusions about the flowers of *Cycadeoidea*. He concluded that the male structures were mature and did not open up at all. This interpretation showed the top of the male structures united into a single mass. In 1968, Delevoryas modified his earlier views. He now suggested that the upper part was lobed like the sections of a tangarine and that the spore-bearing parts were borne on ribs. Here also, the interpretation differs from that of Wieland in that the male structures are considered mature and that they do not open out as in our model.

The Wieland model is rather similar to some flowering plants alive today and this implies that *Cycadeoidea* could have been their ancestor. The Delevoryas interpretation, however, is unlike any flowers alive today and could not have played a role in the evolution of the plants we know today.

If Delevoryas is correct we have a model of a fossil cycad plant with flowers that never really blossomed (or opened up) as we have shown. But the question is hardly resolved. There is an unusual opening at the base on the inner side of the male structures; exactly where one would expect it to be if they were to open as Wieland had suggested. But it could be that this is a crack in the fossil and not an opening in the plant. These scientific interpretations are only educated guesses based on fragmentary fossils over a hundred million years old. We may, in fact, never know for certain how the flowers of *Cycadeoidea* actually bloomed.

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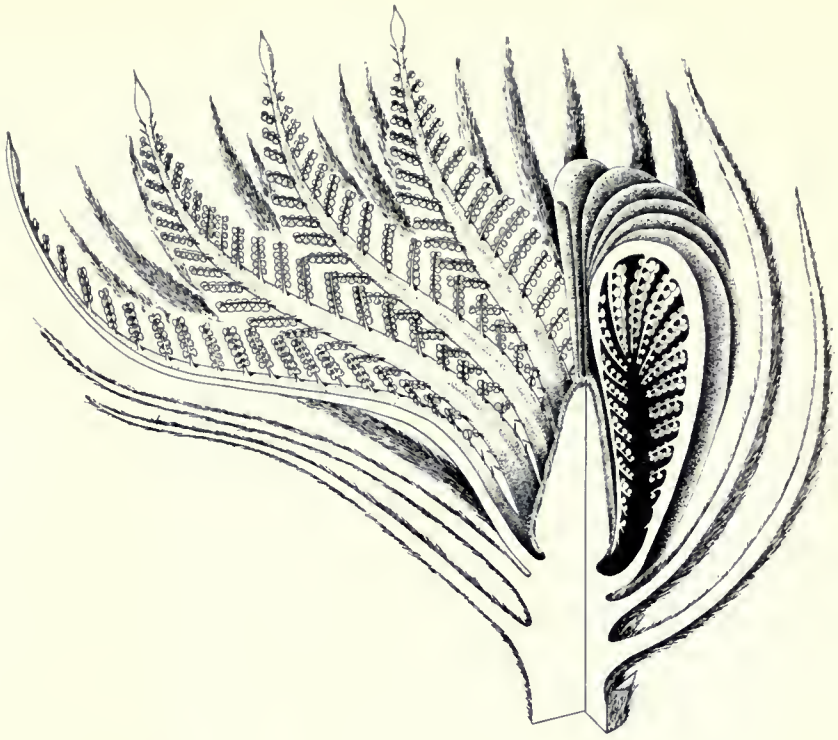
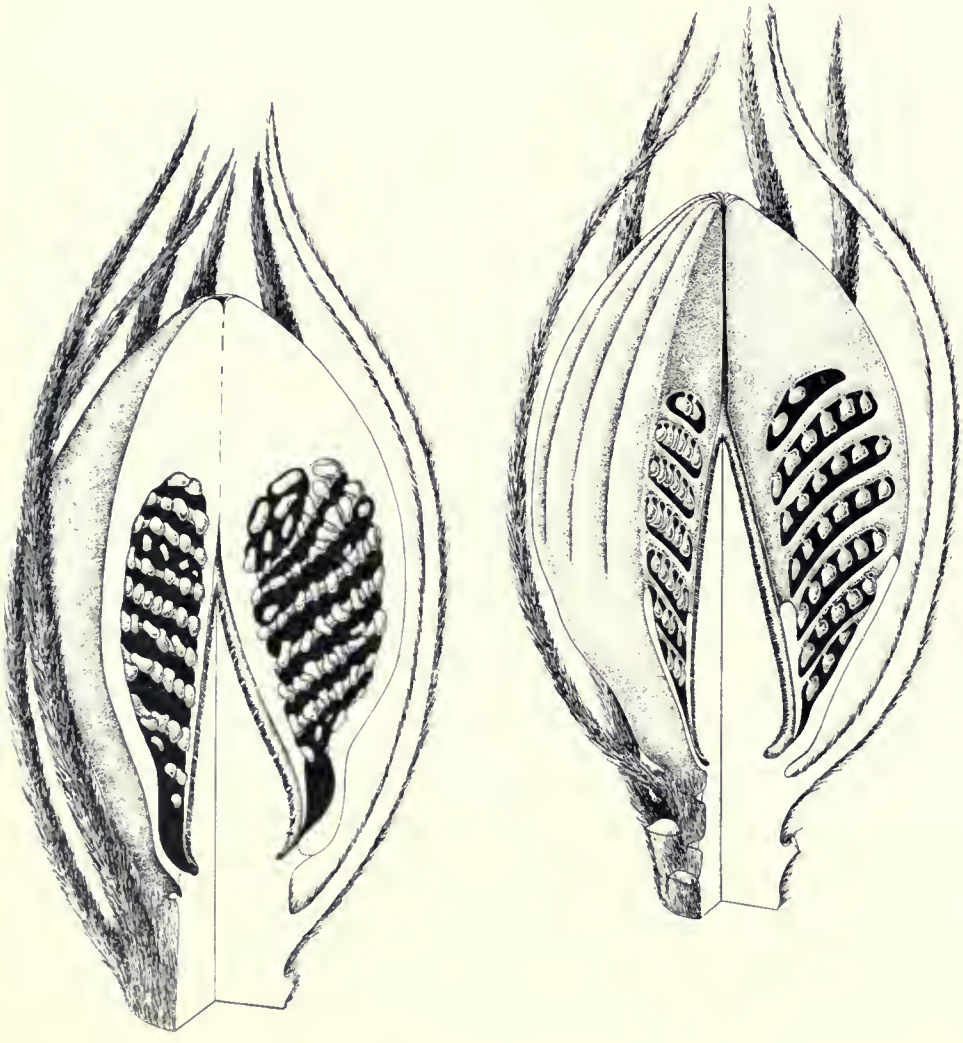


Right: *Diagrammatic view of the* Cycadeoidea *flower as interpreted by Wieland in 1906. The male structures on the right are unopened while those on the left are opened out as Wieland suggested.*



Two interpretations of the Cycadeoidea *flower according to Delevoryas. In the diagrammatic view at the left, the male structures are united at the top and do not open out—according to his 1963 interpretation. At the right, a diagrammatic view of the* Cycadeoidea *flower according to Delevoryas' latest interpretation (1968). Here the male structures are separate at the top and with the spore bearing parts borne on ribs.*

Summer Journey

INSECTS

By George Fricke
Raymond Foundation

Weird area in front of the lantern bug's eye (family: Fugaridae) is hollow but its certain function is unknown. The flying insect is 3½ inches long, lives in Panama. Photo by Hymen Marx.

"Insects" have been chosen as the "stars" of the Museum's Summer Journey because most children already have some interest in them. Many boys and girls have collected "lightning bugs" or "fireflies" on warm, summer nights. They have collected cocoons in fall and kept them, hoping to witness the emergence of a moth the following spring.

Children taking the Journey during June, July or August, will become acquainted with the wide variety of insect life found in the world today. The insects group is the largest in the animal kingdom—probably close to one million different species that come in many sizes and shapes.

The aphids are practically microscopic, while the Goliath beetle of Africa may be larger than a mouse. Insects have three body parts—head, thorax and abdomen—and their bodies come in a wide variety of shapes, from the long and slender walkingsticks, to streamlined water bugs and diving beetles, to beetles such as the "June bug," which are short and heavy-set.

Insects have six legs, two antennae or "feelers," and most have wings. These structures, too, come in a variety of shapes and sizes. Antennae may be long, slender and clubbed on the tips, as in butterflies, or long, hair-like, or even short and feathery, as in moths. They may be longer than an insect's body, as seen on some long-horned woodborers.

Some insects, such as the walkingsticks, are wingless. True flies, such as the mosquitos and house flies, have only two wings. Most insects have four. Dragonfly wings are transparent and both pairs are similar in size and shape. The first pair of wings of beetles are usually hard and shiny. The wings of moths and butterflies are covered with scales.

The southeastern United States is the home of the Rhinoceros beetle (family: Scarabaeidae). This specimen is 2½ inches long and ¾ inch wide. It eats fruit. Photo by Hymen Marx.

The legs of insects are often adapted for special functions. The front legs on a mole cricket are used for digging. The front legs of a praying mantis and of the giant water bug are adapted for seizing or catching other insects for food. The hind legs of grasshoppers and locusts are adapted for jumping.

To many people, any insect is a "bug," but a true bug is an insect with a beak for feeding on liquids or juices.

After becoming acquainted with the variety of insects and with differences between various groups of them, the Journey moves to several habitat exhibits in the zoology halls. Their colors, shapes and markings often make insects hard to find in natural surroundings but they may be found in some of the habitat displays if one looks for them. For instance, in the Mount Cameroon exhibit in Hall 20, bird habitats, one should be able to find at least six insects.

"Insects" is No. 58 in the Raymond Foundation's Journey Program, initiated in 1955 to help children discover objects of interest in the Museum on selective do-it-yourself tours. An award program recognizes the children's accomplishments in the Journey program. Upon successful completion of four different Journeys, a child receives a Traveler's Award. When eight are completed, he gets an Adventurer's Award, and when he completes 12, he earns an Explorer's Award. Four different Journeys are presented each year.

Each spring, a Traveler's Day is held at the Museum. Last month, 208 boys and girls were presented with different awards in recognition of their participation in the journey program.

Upon completion of 16 Journeys, which takes four years, a child becomes a Beagler and is presented with a copy of Charles Darwin's *Voyage of the Beagle*. A special Journey takes him through Museum halls to see some of the specimens that Darwin saw on his historic journey. Upon completion of this, the child becomes a member of the Museum's Discoverers' Club, which now has a membership of 170. The Discoverers' Club meets once a year in the Museum, where staff members present special programs, which sometimes include glimpses of Museum activities behind-the-scenes in the scientific departments.

Journey sheets and information on the free program may be obtained at Museum entrances.

Look! Up in the sky!

It's a bird!

It's a plane!

No! It's

. . . a centipede

"Kite flying in Indonesia," writes Robert Shaplen in a recent *New Yorker,* "is more than a national pastime, it is a virtual obsession." This attitude became easier for Field Museum staff members to understand on a recent spring Friday. The occasion was prompted by an assignment given by Associate Professor William Brincka, of the Art Institute, to his class in Three-Dimensional Structures: "Design an interesting, flyable kite." Other students were invited to participate. Mary David, who designed Field Museum's kite exhibit, "The Wind in My Hands," brought along the guest of honor, Ben Blinn, a kitist from Columbus, Ohio. Chicago kitists joined in, and staff members of Field Museum spent a long lunch hour enjoying the wind in their hands.

Below, Ben Blinn and Mary David enjoy lunch. Their two seven-foot box kites are at the other end of two and a half miles of line, well out over Lake Michigan. Blinn uses an electric motor to reel his kites in. *At left,* a lone representative of Illinois Institute of Technology prepares his airplane-like kite for flight.

At Right, top, a bird kite wings its way over Grant Park; *center,* the winning kite, designed by Bruce Dilts, is a triple box kite. Dilts' kite was judged the most readable as well. It was covered with the comic sections of Chicago's Sunday papers; *bottom,* Art Institute students Connie Demitriu and Sister Electa with Blinn and Bill Brincka.

Above, Associate Curator Hymen Marx attempts a lift-off under the watchful eyes of other staff members. This Gayla bat-kite was the second of Curator Marx's flights that afternoon. The first ended in tragedy when he discovered, rather too late, that the end of the kite string was not attached to the reel. *Below,* Manuel Vega *(center)* and two friends hold his Centipede kite before lift-off. The intricate, colorful kite made a number of short flights, landing less abruptly and more gracefully than the others.

Dr. Karel Liem at work in his office, studying specimens of air-breathing Synbranchid eels.

Karel Liem:

A Lesson in Persistence

By Patricia M. Williams
Field Museum Press

THE noted British scientist Faraday was once asked how to do research. Faraday said, "Start it, carry on with it, and finish it." Karel Liem, Field Museum's Associate Curator of Vertebrate Anatomy, might serve as a model for a young person asking that question. He is well endowed with determination, not only in his professional life but in his personal life as well. Although scientists are often characterized as introverts, Karel Liem is a jovial extrovert who possesses unusual perceptiveness, creativity and skill. And he is an uncommonly talented scientist.

Liem was born in Java, Indonesia, and received his bachelor's and master's degrees at the University of Indonesia. He came to the United States in 1958 as part of a group of Indonesian students recruited by the International Cooperation Administration, Washington, D. C. Individual academic preferences were disregarded and the entire group was sent to the University of Kentucky. On arrival they were given a brief course in American life and manners, including how to make a phone call and how to behave at the dinner table. At one point in the orientation the Indonesian students were loaded into a bus and led on a pilgrimage to view the elaborate tombs of such famous horses as Man O' War. At each tomb the tour guide gave a brief talk on the illustrious life of that particular horse, invariably dissolving into tears as she spoke. The Indonesians, who have a philosophical attitude toward human death, were astounded by this bit of Americana.

Liem, who had come to America to study comparative anatomy, found that there was no one working on this field at the University of Kentucky. He explained his needs to the university authorities and they sent him to the University of Cincinnati. Once there, Liem discovered that Cincinnati had no comparative anatomist either and he returned to Kentucky. He was next packed off to Brown University, which also proved to be without a comparative anatomist, and he returned again to the University of Kentucky. Refusing to send him to Stanford because it was too far away, the authorities directed Liem to the library, instructing him to locate a school in the area with an anatomist on its staff. He chose the University of Illinois at Urbana, packed his bags again and headed off in pursuit of a suitable doctoral program. At the University of Illinois Liem was told that the scientist he was seeking had retired in 1947 and the university had no one working in his field of interest. Rather than continue his frustrating 20-day tour of midwest universities, Liem decided to stay at Urbana. He worked with the distinguished herpetologist Hobart Smith and received his doctorate.

Soon thereafter Liem's visa expired and he was unable to get it extended. He had decided not to return to Indonesia, which was under Sukarno's leadership, and appealed to the American Embassy for help. The embassy, bound by regulations, turned Liem's passport over to the Indonesian Embassy which refused to return it to Liem, insisting that

he return to Indonesia. After difficult and expensive legal maneuvers, Liem obtained his passport and left America to join his parents in Holland.

As Assistant Professor of Zoology, Liem taught at the University of Leiden from 1962 to 1964, when he received an offer from the University of Illinois College of Medicine to teach comparative anatomy. A struggle with the immigration authorities began which continued almost until the planned departure date. Finally, the visa was issued and Liem flew to Chicago to begin a new phase in his career.

Offering a course in comparative anatomy represented a significant change in concept for both the University of Illinois College of Medicine and Liem. Prior to his arrival, the university had presented courses in human anatomy only, but it was felt that changing the concept of the course would provide greater stimulation and interest. Liem, who is now Associate Professor of Anatomy, had to orient himself to a group whose major interest was medical instead of zoological, which he did quite rapidly. He enjoys his lectures and lab work and expresses admiration for the M.D.'s with whom he works, describing them as "very quick and clever—good with their hands."

While continuing his full-time position at the College of Medicine, Liem joined the staff of Field Museum in 1965 as Assistant Curator of Vertebrate Anatomy. Although this arrangement places a dual burden of responsibilities on Liem, he is able to take full advantage of the technological expertise and equipment at the College of Medicine and the extensive collections and library of the Museum.

In the Museum's Department of Zoology the comparative anatomist is in a key position. As Dr. Alan Solem, Curator of Lower Invertebrates, says, "the anatomist can provide a focus for the other scientists, creating a flow of ideas and stimulating new avenues of thought." Dwight Davis, Liem's predecessor, fulfilled this role admirably, joining his colleagues in a number of projects while maintaining an independent line of research. Obviously, professional respect is the foundation of this interaction and Liem has not only earned the respect of his colleagues but their friendship as well. Dr. Robert Inger, Curator of Amphibians and Reptiles, points out that Liem straddles areas of zoological research and, although his point of view may vary, his interests and materials are allied with those of other Museum zoologists. Liem is now working on a project with Loren Woods, Curator of Fishes, and on another with Hymen Marx, Associate Curator of Reptiles, in addition to continuing his own research.

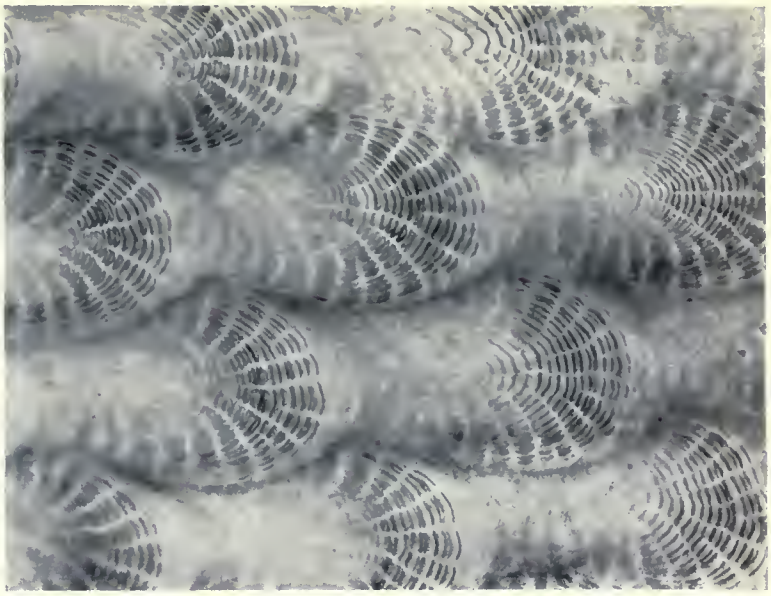
Liem's research has generated great admiration and he is consistently described by his co-workers as "original" and "highly creative." In a recent issue of *Time*, a pair of biologists noted, "A fish with the ability and inclination to leave the water and walk around is, to the best of our knowledge, unmanageable." Liem has managed to conduct a series of successful research projects on just such a startling fish. He first came to the attention of the scientific community for his work on the circulatory system of the air-breathing, land-walking rice eel, *Monopterus*. In most fish the blood is pumped first to the gills and then travels at a low pressure through the rest of the body. In *Monopterus* Liem found two pumping systems—a small one to the fish's lung-like organs and a larger one to the rest of the body.

While he was studying this fish's unique circulatory system, Liem discovered another interesting characteristic. Not only does this astounding fish breathe air and travel across land, it changes sex as well! *Monopterus* is a member of the fish order Synbranchiformes and Liem found that most members of this order are born as females and, later in life, change sex to become males. As he continued his work on this sex reversal, Liem found that in some geographical regions males of this order are born as males and undergo no transformation. Further research led to the conclusion that the sex reversal is linked to hormones. The essential anatomical structures are present from birth and when the vital hormones are secreted these structures develop and the female becomes a male. Having carried his research to the chemical level, Liem left it and a pharmaceutical company is now exploring the chemical aspects of this fish's sex reversal.

The cichlids of Lake Tanganyika are Dr. Liem's current research subject. Although all of the fish of this large and closely-related family have descended from one ancestor, they have extremely diverse eating habits and mechanisms. Some cichlids eat algae and others are planktonic; some eat fish of their own size and others crush snails; still others suck eggs out of the mouths of mouth-breeders (fish that carry eggs in their mouths). To accommodate this variety of menus, the fish have developed suitable jaw mechanisms.

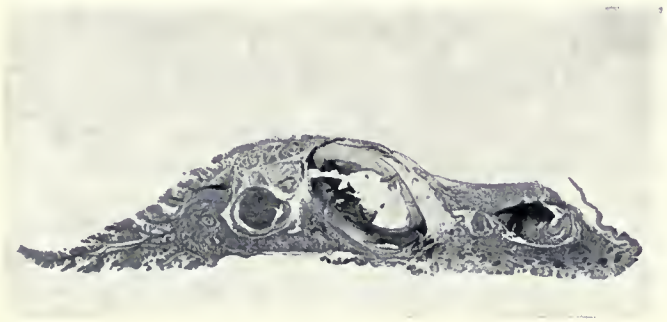
The evolutionary implications of all of his studies have been of continuing interest to Liem. Regarding the cichlids, he hopes to show that relatively minor genetic changes may have resulted in major morphological changes and is

This eel is one of the air-breathing Synbranchids, which are one of Dr. Liem's current research projects. He is particularly interested in the anatomy of this fish order. Concurrently, he is studying the many variations within the cichlids, another family of fishes. The eel pictured is about 18 inches long. (Photo by W. M. Winn.)



In his studies, Dr. Liem employs x-rays and highly magnified photos of anatomical structures. X-ray (above) *shows the head of a Synbranchid eel, revealing part of the complicated mechanisms which are adaptive to breathing air and life out of water.*

Right: *Graceful precision is evident in this highly magnified view of the scales of the same eel. Each of the horseshoe-shaped patterns lies within an individual scale.* (Photos by W. M. Winn.)



Seemingly painted by a surrealist or an abstractionist, these are actually magnifications of the gill cell structure of the same Synbranchid eel. Photo below is a detail of the left portion of the structure shown above. (Photos by W. M. Winn.)

pursuing this thesis from a functional aspect. The change of one structure leads to a chain reaction of other structures also changing to accommodate the new. In an effort to deduce why certain structures must change, Liem conducts surgical experiments in which, for example, he may remove a structure to see what the fish can and cannot do without it.

This study will take 10 to 15 years to complete, during which time Liem hopes to go to Europe and study the collections in museums there. There are about 36 different endemic genera in Lake Tanganyika, including 130 separate species, and Liem plans to visit the lake, which he likens to "one big laboratory in which nature has conducted a huge experiment resulting in the creation of a tremendous variety of fish," to study the fish under natural conditions.

It is this kind of ambitious and innovative research that has led Hymen Marx, Liem's friend and Museum co-worker, to predict that Liem will one day be the undisputed authority in his field.

"While it is difficult to lay down the conditions which lead to success in research, it is easy to say what makes it impossible. The fatal enemy of research is a full engagement book." At least, that is Sir Lawrence Bragg's opinion and Dr. Liem concurs. However, as Liem's reputation grows, he is invited to serve on more committees, attend more meetings and participate in more councils. Dr. Austin Rand, Chief Curator of Zoology, has served on committees with Liem and has found him to be "a man of good sense and wide interests." Certainly these qualities plus Liem's willingness to become involved in matters that concern him, make him an asset to any committee and will serve to increase the demands on his time. Liem, however, has successfully grappled with immigration officials, university red tape and sex reversals of land-walking fish and will surely find a way to reserve the time needed to fulfill Hymen Marx's prediction of success.

A record attendance of more than 5,400 Members, their families and guests marked Field Museum's 75th year on Members' Night, 1969. The Museum officially opened to the public on June 2, 1894. Elements of both past and future complemented the present during the event, which offered nostalgic glimpses of the "Gay 90s" in the lantern slide show of early expeditions and the songs of the Avant Garde Barbershop Quartet. A highlight of the evening was the preview of the dramatic new exhibit—*A Sense of Wonder, A Sense of History, A Sense of Discovery*—expressing the scope of natural history, the Museum's own origins and history, and the important area of scientific research. On the third floor, curators explained aspects of their studies and research programs to those touring the departments to see special displays depicting current research and historical aspects of the collections. (*Photo by Christopher Michael.*)

ON OUR SEVENTY-FIFTH

REMARKS BY MUSEUM DIRECTOR E. LELAND WEBBER ON THE OPENING OF THE 75TH ANNIVERSARY EXHIBIT.

In 1943, speaking at the observance of the 50th Anniversary of the Museum's founding, Robert Maynard Hutchins said, "As an educational institution, Field Museum possesses certain special advantages. It has no football team. It gives no course credits or course examinations and awards no degrees. Its labors are not encumbered by the elaborate apparatus of academic bookkeeping which has resulted in education by the adding machine. The students of the Museum come here to learn. Formal education, moreover, in schools, colleges and universities is something you finish. It is like the mumps, measles, whooping cough, or chicken pox. Having had education once, you need not, indeed you cannot, have it again. The museum is free from this regrettable tradition. It operates on the cradle-to-the-grave principle. The Museum is seductive. Perhaps because it does not employ compulsion, but woos the learner with artful wiles, it continues to deceive him into educating himself as long as he lives." I do not know what Dr. Hutchins would have to say, were he here this evening, about universities or about museums, and I think it best perhaps not even to speculate on what he might say, but certain it is that Field Museum is now as it was 25 years ago—an institution for the education and delight of people of all ages, of all stations in life, and at all times.

Through a strange juxtaposition of historic events it has happened that each of the Museum's quarter century anniversaries has come at a time of national crisis. At the time of the 25th Anniversary in 1918, the nation was in the climactic stage of World War I. Twenty-five years later at the time of the 50th Anniversary in the fall of 1943, the United States was engaged in two hemispheres in the second of the world's great struggles. Today we find ourselves again at war, and in addition, torn by domestic dissension and turmoil that pose the greatest internal threat that the United States has faced since the Civil War.

Yet, in spite of the national crisis in which each of these anniversaries occurred, despite the distractions and conflicting demands, Field Museum received a new impetus to move vigorously ahead. In 1918, this magnificent structure was rising to completion to take its place among the great museum buildings of the world. In 1943, the second largest gift in the history of the Museum, provided by Marshall Field III, laid the basis for an expansion of the scientific staff and a quarter century of intensified scientific activity. Today Field Museum is again in a process of change, of modernization, of intensified activity. Since its beginning the Museum has been the recipient of strong financial support, not only the extraordinary benefactions of the Field Family, but also generous and vital major gifts from many others—names such as Ayer, Pullman, Harris, Raymond, Ryerson, Buckingham, Searle, Simpson, McCormick come to mind—and there were many others.

What will the coming generation find, in five, in 15, in 25 years when the open circle on the banner at the north end of Stanley Field Hall is closed on our 100th Anniversary—what will they experience of a Sense of Wonder, a Sense of History, a Sense of Discovery? The answer is ours to decide—with those in our city who care enough about the quality of life we leave behind to build on the rich legacy that has been handed to us.

Dr. Austin L. Rand (left), Chief Curator of Zoology, and Dr. Emmet R. Blake, Curator of Birds, examine specimens of the Red-Billed Curassow, a nearly extinct Brazilian bird related to turkeys and pheasants. The specimens, which are very rare, were gifts of Professor Augusto Ruschi, Brazilian naturalist and hummingbird expert.

RECEIVE RARE BIRD SPECIMENS

Two extremely rare specimens of a nearly extinct Brazilian bird arrived at Field Museum's Department of Zoology recently. The birds were a gift of Professor Augusto Ruschi, reknowned Brazilian naturalist and hummingbird specialist. He presented the birds to Dr. Austin Rand, Chief Curator of Zoology, and E. Leland Webber, Field Museum's director, at his estate in Espirito Santo, during the Museum's second Brazil Tour this past winter.

Professor Ruschi also presented the Museum with a set of his publications, which include his important studies of the biology of hummingbirds.

The Red-Billed Curassows, rare relatives of the turkey and the pheasant, are deep black with a feathered ruff on the head. The two specimens are the first of this species for the Museum. Dr. Emmet R. Blake, Curator of Birds, said there are probably only about a dozen specimens in existence in museums.

These birds once ranged from middle-coastal to southern Brazil but now occur rarely only in the middle of their former range. As the forest cover is reduced to permit more farming and urban development, the population of this game bird is declining rapidly.

CALENDAR OF EVENTS

June 1–24, 9 a.m. to 6 p.m., daily; June 25–September 1, 9 a.m. to 6 p.m., Monday, Tuesday, and Thursday; 9 a.m. to 8 p.m., Wednesday, Friday, Saturday, and Sunday.

Through June 15 "The Wind in My Hands" Field Museum's special spring exhibit devoted to the art, science and fun of flying kites. The free exhibit includes the history of kiting with example of antique and contemporary kites and kite-flying equipment and many excellent and unusual photographs. Hall 9 Gallery.

Through November 16 Field Museum's **75th** Anniversary Exhibit: A Sense of Wonder, A Sense of History, A Sense of Discovery. The free exhibit emphasizes the scope of the Museum's activities since its founding in 1893, following the World's Columbian Exposition. Examples of research programs by Museum Curators and other significant work, such as the outstanding taxidermy of Carl Akeley, are among the displays, which also include some rare and beautiful specimens from the Museum collections. Hall 3.

Through June Summer Journey "Insects" Increased understanding of the world of insects, their life cycles and habits, is the goal of the newest journey, a do-it-yourself tour for any boy or girl who can read and write. Free Journey sheets and information on the Journey program is available at Museum entrances. The program, which features four Journeys each year and an award system for participating children, is sponsored by the Raymond Foundation, the Museum's education department.

MEETINGS:

Illinois Audubon Society, June 4, 7 p.m.
Chicago Shell Club, June 8, 2 p.m.
Nature Camera Club of Chicago, June 10, 7:45 p.m.
Chicago Mountaineering Club, June 12, 8 p.m.

July 7 — August 29 Guided Public Tours Monday through Friday at 2 p.m., with movie, "Through These Doors" at 3 p.m. in the Lecture Hall. Free.

July 7 — August 24 Cuna Art and Life The temporary exhibit explores the art and culture of the Cuna, who live on islands off Panama and changes brought by modern ideas. Hall 9 Gallery.

FIELD MUSEUM
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E. Leland Webber, Director
BULLETIN
Edward G. Nash, Managing Editor

BULLETIN **FIELD MUSEUM OF NATURAL HISTORY**

Volume 40, Number 7 July 1969

The Gray Eminence of Kew Gardens

By Phil Clark
Public Relations Counsel

When you meet an old friend—at least 103 years old, in fact—under completely alien circumstances it's always a pleasant surprise.

It was last fall when I was visiting that greatest center for the horticulturally inclined, Kew Gardens near London, that I came upon an old Mexican friend. The friend is really a plant, *Hechtia argentea*—a member of the Bromeliaceae or pineapple family—and familiar to me both from Mexico's wild canyons in the State of Hidalgo and from my own succulent and cacti garden near Mexico City, during the ten years that I lived there.

There it was, and of astonishing size, standing on a special bench and with a proud label above it reading: "Bromeliaceae. *Hechtia argentea*. Mexico. This Plant Was Exhibited at Brussels in 1864." 1864! No wonder its pineapple-like, richly silver leaves reached about three feet from mid-rosette to below the pot edge.

So exciting was the great age and size of this magnificent plant, that I sought out the horticulturist in charge of the Kew cacti and succulent collection, an engaging and gentle Scot, Edward W. Macdonald. He showed me articles about the plant clearly establishing its great age and mentioning that it first flowered in 1870 and has flowered every year since 1957.

At this point the story got more interesting, for Kew Gardens, believing this plant to be a horticultural variety and to be the only one of its kind in the world, had been working with all its immense gardening skill to propagate the plant. Since Hechtias are dioecious (flowers of only a single sex are borne on each plant), it was necessary to cross it with Hechtias of other species. Sadly, the young all resembled the other parent and failed to possess *H. argentea's* handsome and distinctive silver leaves.

What fun it was to watch Macdonald's face when I told him that I had seen whole canyon sides of the silver rosettes

Edward Macdonald, in charge of the cacti and succulent collections at Kew Garden near London, admires what is probably the world's great gray eminence among its kind, the Bromeliaceae species Hechtia argentea, *which is native to south-central Mexico's arid, mountainous areas. This plant was first exhibited at Brussels in 1864.*

Country like this is home to Hechtia argentea. *Above, cliffs near Toliman Canyon, not far from Zimapan, Hidalgo. The tree cactus of the organ type is* Myrtillocactus geometrizans.

Dra. Helia Bravo, of the National University's Botany Department and probably the world's leading specialist on Mexican cacti, peers up at a canyon-side of Hechtia argentea *near Zimapan. The pine-apple-shaped* Hechtias *gleam in the sunlight, like rosettes of pure silver. The chain-like cactus dangling from the rock is* Opuntia stenopetala.

of *H. argentea* at the Cañon Toliman near Zimapan in Hidalgo, Mexico. At first he thought I was confused, but on full description of the wild plant, his face flowered in smiles. "Well," he said slowly, "this is a great relief, since the plant will not become extinct, but it does rather lessen the distinctiveness of our specimen, doesn't it now?"

I pointed out that the Kew plant certainly remained the great gray eminence of all *Hechtia argentea* in the world. Surely among hundreds of specimens in Mexico, both wild and cultivated, I had never seen one of such health and size.

Macdonald was interested in hearing about the home of his pampered plant. The area, just off the Laredo-Mexico highway about 60 miles north of Mexico City, at Zimapan, is semi-arid, mountainous and rich in cacti and other succulent plants. Ten miles west of Zimapan, the Toliman River has cut a giant canyon in which lead mining has been underway for many years and continues at a reduced pace. The road from the canyon top to the river is narrow, rutted and one dizzying hairpin curve follows hard on the last.

In some places the canyon sides are sheer rock, narrowly separated and in others the canyon is quite wide. It is in these wider, sunnier areas, where the *Hechtia* grow in niches on the canyon's rocky sides and where the largest numbers of cacti may be found.

Plant hunting is possible in Toliman only in winter, since the river is too high during the summer rainy season to walk along the cliffsides and climb up where plants look most interesting.

On one trip, with members of the Sociedad Mexicana de Cactologia we collected 30 or 40 cacti species, including the strange bishop's cap (*Astrophytum myriostigma*), the lemon-yellow flowered *Dolichothele longimama* with long, breast-like tubercles, the fractured-looking, ribbed *Echinofossulocactus* with crowns of small, candy-striped pink and white blooms and several giant barrel cacti (*Ferocactus* and *Echinocactus*), five species of *Agave* (which the Mexicans call maguey and we reasonlessly call century plant) and the aforementioned *Hechtia*.

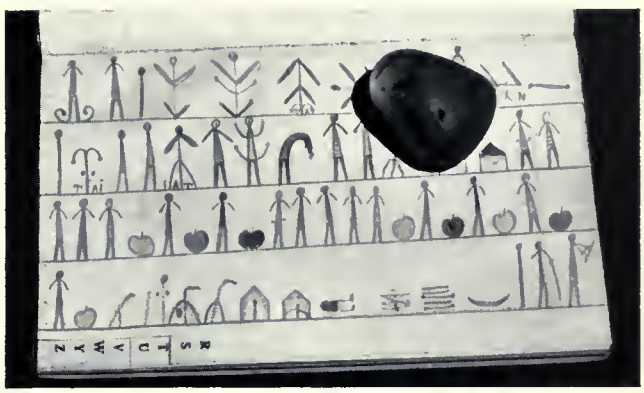
This collection was mostly planted in Mexico's new National Botanical Garden in the lava rock fields near the National University south of Mexico City. You can see them there—including numerous *Hechtia argentea*, some large, but none so distinguished nor nearly so immense as Kew Garden's great plant.

During a planned Kew Garden visit this summer, I intend to present Mr. Macdonald with a tiny, potted specimen of this silvery species, which I hope will turn out to be the right sex for a mating with *Hechtia argentea's* grand old man. The plant was collected during Field Museum's 1968 Mexican Tour, in still another area—from the rocky mountains between Mexico City and Cuernavaca, along the new highway, where it grows in company with a different Hechtia species, one with red-striped, green leaves. It was grown for a year in the window of Field Museum's Public Relations office, and made its transAtlantic prenuptial flight in June, for flowering which we hope won't wait 30 years: A long time even as Hechtias count time.

"The Art and Life of the Cuna Indians," a new temporary exhibit, begins July 9 at Field Museum. The exhibit shows how elements of modern, foreign, civilization have been used by the Cuna without the sacrifice of their individuality and independence. The intricately hand-sewn *molas* on this month's cover are evidence of this adaptibility. Shown on the cover (starting at upper left) are: a traditional myth scene, with a baby in a birth hammock suspended between two deer. Among the Cuna, deer replace storks as the legendary bringers of new babies, and deliver the infants by carrying them on their antlers. Next is an old *mola* with a geometric pattern. The center *mola*, very recent, was inspired by a "Green Beret" training center in Panama. Surrounded by parachuting soldiers, the crab-like creature is actually a Cuna interpretation of an airplane (lent by Mrs. Regina Holloman). Bottom, two more up-to-date *molas*, the first a Panamanian television test pattern (lent by Mrs. Regina Holloman) and next an Ovaltine bottle, animated by the Cuna designer, and confined within the traditional needle-working style. In the following pages, Mrs. Holloman writes about these remarkable people.

Cuna woman paddling canoe. (Photo by F. Louis Hoover.)

"Medicine stone" and handwritten book of chants. (Lent by F. Louis Hoover and the Museum of the American Indian.)



Acculturation and the **CUNA**

By Regina Holloman

Department of Anthropology, Northwestern University

The Pan American Highway stops at Chepo, east of Panama City, and does not resume until a point well across the Colombian border. In between lies the Darien jungle, broken only by networks of rivers and by the Serania del Darien, a mountain chain stretching from the Isthmian area into Colombia. The Darien is today one of the most inaccessible regions remaining on earth.

At the time of the Spanish Conquest this area was occupied by numerous Cuna-speaking peoples. Estimates vary from 300,000 to 700,000. In 1510 Vasco Nuñez de Balbos became governor of the first Spanish settlement in the Darien, Sante Maria la Antigua del Darien, located on the western side of the Gulf of Uraba. For 250 years thereafter the Cuna were subjected to extreme pressure as the Spanish tried to colonize the Darien, extract gold from its numerous but small mines, and subject the Indians to political control.

Cuna pacification was finally achieved in 1787 but it was the Spanish who capitulated and not the Cuna. Although greatly reduced in number by disease and warfare, the Cuna entered the 19th century in firm control of large areas of the Darien region of eastern Panama. Through a series of alliances with French and English buccaneers, by skillful use of the Darien barrier, and through their willingness and ability to simplify and modify their formerly complex social organization the Cuna became almost unique in emerging from the Spanish period as an independent people.

The Darien region, together with the rest of Panama, was incorporated into Colombia after that nation obtained its independence from Spain. A liberal Colombian government in the mid-19th century recognized the internal autonomy of the Cuna of the coastal region. With the external threat removed, the Cuna began to move from the coast and the interior onto the small coral atolls which dot the Caribbean coast in that area. The new variant on Cuna culture which developed in the new environment is what we know today as the society of the San Blas Cuna. Only 150 years old, San Blas society is nevertheless the successful culmination of over 400 years of conflict and competition between Cuna and representatives of various Western societies.

In the 20th century the Cuna social system has contin-

ued to exhibit traits of flexibility and adaptiveness. Between 1903, when the region became a part of the newly independent Republic of Panama, and 1967 the Cuna achieved an overall literacy rate in Spanish of nearly 50 per cent, learned to organize and operate a variety of small businesses, and to move between their own villages and the cities of Panama with relative ease. Yet when one visits the San Blas region for the first time, he is struck not by what is new and modern but by what is traditional and uniquely Cuna. The cane huts; the sailing canoes; the women in their gold noserings, red scarves and beautifully sewn *mola* blouses; the chiefs chanting almost nightly in the town meetings held in most villages—these are the events and sights which deeply impress the outsider. It is the continuities in the Cuna cultural experience which are unique and fascinating.

Other and larger cultural groups have broken apart under the stress of contact with the world market, industrialism and nation-states. Yet the San Blas Cuna have accepted their Panamanian citizenship and with the aid of the central government have entered upon a controlled program of change and development without the destruction of their cultural system. With the hope of finding some of the reasons for their success in preserving their own way of life while adapting to the realities of the modern world, I went to San Blas in 1967. The answer, I found, is complex. It lies in the strength and flexibility of San Blas social organization, in the caliber of Cuna leadership, in the ecology of the region, and in historical accident.

The San Blas Region. The Comarca (Reserve) of San Blas is a self-governing region within the Republic of Panama. It comprises the archipelago of San Blas and the coastal strip and adjacent jungle area to the continental divide along the Caribbean coast in the eastern part of the Republic. Under terms of an agreement dating originally from 1925 the San Blas Cuna enjoy a unique status within the Republic. Schools are placed in villages only with the consent of local authorities, and officials of the government of Panama deal through the regional and local Cuna officials.

Although most of the 20,000 San Blas Cuna live on the atolls, theirs is a land-oriented rather than an island culture. The islets are without fresh water and can be inhabited on a year-round basis only if they are located near a river. Only 40–50 of the hundreds of islets are inhabited for this reason. A few villages within the territory are located along the shore or on the rivers.

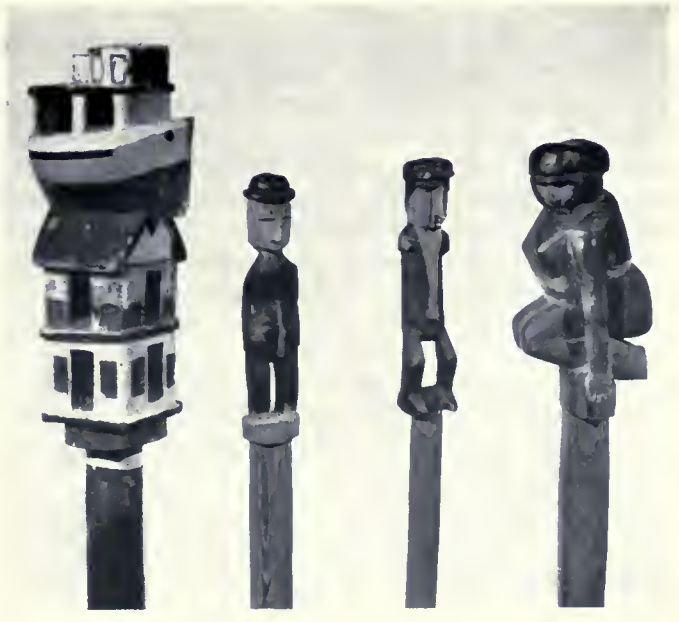
The Cuna exploit their territory economically in two distinct but equally important ways. The basis of the subsistence economy is the plantain, which is grown in a variety of species and eaten in several ways. Supplemental foods are corn, rice, fruits, sugar cane, fish, and bread. The inclusion of bread as a dietary staple represents a dependency upon the market, since wheat flour must be purchased. Until about 20 years ago wild game was also a diet supplement but at the present time the supply is so short that only a few men in the entire region engage in hunting. To compensate for the decline in the meat supply the raising of domestic pigs and chickens has begun to spread in the region.

The basis of the cash economy is coconut cropping. Every adult controls or has access to some coconut land, and every household receives the major portion of its cash income from the sale of coconuts. Cuna coconuts are sold to small trading vessels. The control of the San Blas trade has been alternately in the hands of Panamanian and Colombian entrepreneurs. Although coconut prices have fluctuated widely in connection with world market conditions, the effects of the fluctuations upon the Cuna has been adequately cushioned by the subsistence system. For 15 years, coconut production has declined because of a serious blight.

Opportunities for the diversification of agriculture in San Blas are limited by the absence of roads connecting the region with the cities of Panama. At present, entry to San Blas is by boat or by single engine plane, neither suitable for transporting perishable agricultural products.

The most likely source of future development in San Blas is tourism. The natural beauty of the area and the exotic visual spectacle presented by San Blas villages and the people themselves have a strong appeal. At the present time there are several small tourist facilities operated in the area, one by the Cuna themselves. However, the Cuna have mixed feelings about the presence of outside entrepreneurs in their territory. The Panamanian newspapers in April of this year carried news of the burning of one of these facilities by the Cuna in connection with a dispute over the terms of its operation.

Traditional Cuna Culture. Because all cultures are constantly changing, it is not really accurate to speak of "the traditional culture" of a people as if there were a single description applicable to all periods in the past. The picture of San Blas culture which is presented here is appropriate



Policemen's sticks are carved by their individual owners and represent the owner's authority and influence. They are from three to four feet high. (The house-boat and the kneeling figure designs were lent by Mrs. Regina Holloman; the two center sticks were lent by the Museum of the American Indian.)

for the period around the turn of the century. By that time the increased contact brought about by 50 years of life on the islands had already had its effect, particularly on the lives of men. Men's puberty ceremonies, observed until around 1850, were already obsolete. With the demise of the ceremonies had come an alteration in men's dress. Penis shields, received at the time of initiation and worn at least ceremonially into the middle of the 19th century had been uniformly abandoned in favor of Western-style shirt and pants. Dependency on metal tools was well established, and each large village relied upon one or more men who were bilingual and at least minimally literate to handle their dealings with non-Cuna. Cuna men had regularly left the area to serve as sailors on foreign vessels for fifty years or more. Still, the direct impact of the outside world upon the San Blas region was very limited at the turn of the century. The region itself remained closed to all non-Cuna except for the crews of the coastal trading vessels.

Everyday life was dominated by traditional relationships. In each village leadership was in the hands of a group of older men. These men achieved their positions of authority through mastery of traditional knowledge. A young man who aspired to leadership apprenticed himself to a series of teachers over a period of 15 to 20 years. He lived with each teacher for one to several years, working as a member of the teacher's household during that time. Some men traveled to Colombia to study with surviving Cuna savants there, and a few studied medicine among the neighboring Choco Indians. A developing leader came to know a wide territory and the leaders of many villages. The education of no two men was exactly alike, and men of outstanding ability in each generation made their own syntheses of the oral tradition, in this way contributing to its enrichment as well as its perpetuation.

A large village usually contained the following specialists: a medicine man (*inatulet*) who treated the illnesses of individuals; a "place curer" (*apsoget*) who could be called upon in the event of disaster, epidemic or some other problem which affected the community as a whole; a flute master (*kantule*) who took charge of the ritual parts of the female puberty ceremonies; and a seer-shaman (*nele*). If a man aspired to general political leadership he was expected to know something about each of these areas. In addition, it was specifically the task of a chief to master the religious and historical myths of the oral tradition.

Underlying all of the branches of knowledge recognized by the Cuna is a world view based in what might be called a "doctrine of origins." To know the origin of an entity is to be able to control it. The origins are recorded in chants for curing snake bite, chants for obtaining the assistance of good spirits, chants for assisting women in childbirth, chants for dispelling demons of various sorts, chants for appeasing affronted spirits, chants of the origin of the Cuna people themselves and their way of life. Medicine chants are generally used in connection with herbal remedies and supplementary paraphernalia: medicine stones, hot pepper and cacao bean incense, and carved figurines called *uchus*. The efficacy of each of these items is dependent upon the user's knowledge of its origin.

A rich and meaningful ceremonial life also derived from the traditional religious beliefs. The most important of these ceremonies were the singing meetings held almost nightly, and the little and big *Inna* ceremonies held in connection with female puberty and the readying of the matured girl for marriage.

The *Inna* ceremonies involved the preparation of fermented chicha (a drink of corn and sugar cane juice) and prolonged drinking with mass intoxication. The Cuna interpret the physical state of drunkenness as a condition of nearness to God. At the *Inna* the girls' hair is cropped to adult length.

Left: *Young Cuna woman displays elaborately sewn* mola *blouse.* Above: *Men's cooperative work group thatching a roof.* Right: *Cuna village at the edge of the sea.*

The other major ceremonial event of traditional life, the singing meeting, expresses the religious underpinnings of San Blas village organization. Cuna villages are politically organized through a town meeting in which all adult males participate. In the town meetings common problems are discussed and decisions reached by consensus. Separately or in connection with these talking meetings a singing meeting was traditionally held. At these times the chief's hammock is hung in the center of the meeting hut, and he chants from the hammock.

Cuna chanting is in an archaic or esoteric form of the

language and is not readily understood by the listeners, but must be interpreted for them by a "speaker." The subject of the chanting varies. Some chants deal with the origins and mysteries of Cuna religion and life. Others are more like sermons of moral instruction. These latter chants may be extemporaneous.

At the turn of the century the San Blas region was not politically unified. Certain chiefs in each generation became recognized as inter-island leaders by virtue of their exceptional learning and personal charisma. In 1903 there

Above: *Cuna youngsters cluster around canoes on a beach near their village.* (Photos by F. Louis Hoover.)

were two of these men, each heading a faction composed of local chiefs. The association was loose and the ability of the inter-island chief to influence events in a community other than his own was a function of his personal relationship with the chief of that village.

Below the level of the local town meeting the most important unit of traditional Cuna society was the extended family household. Among the Cuna when a man marries he joins the household of his wife. The house itself is owned by the oldest woman and passes from her to her eldest daughter. The head of the household group is her husband. Agricultural labor is done in common by the men of the household working under the direction of the father-in-law. Each household has a sleeping hut and a cooking hut. If the joint family prospers and grows, more sleeping huts are added. In these cases the use of a common kitchen signals that several apparently independent family groups are actually members of the same household.

The Cuna have traditionally married within the village. The result of centuries of village endogamy is a very high rate of genetic anomalies. The most striking of these is albinism. The Cuna of Panama have the highest rate of albinism in the world—at least .6 per cent of the population. The overall rate for Europe is .005 per cent.

San Blas Today. In one sense, the description of traditional Cuna culture at the turn of the century is still appropriate today. Most Cuna remain loyal to the ideals and values which were expressed in the traditional relationships. However, in their everyday behavior emphases have shifted and new relationships and activities have been added. Perhaps the major observable change is the increasing heterogeneity of life in San Blas, both between and within communities. At the turn of the century all communities participated equally in the traditional way of life and there was very little difference among them, except in size. Today, this is no longer the case. Some villages strike one as highly traditional, others as highly acculturated. One island is the site of the Catholic Mission and the only junior high in the region. A Baptist hospital is located on another. Two islands have government health clinics. Ten have constructed airports. Over twenty have a school of some sort. A tourist hotel is operated by the people of one island. Ten communities own trading boats. U. S. Peace Corps personnel are assigned in several communities.

Within the villages the situation is much the same. There is a sprinkling of cement houses in many communities and some huts have cement floors. About six per cent of all the men of the region are employed in nonagricultural occupations. For the most part these men hold civil service or patronage jobs. A very high percentage of the younger men in most communities are absent at any given time, working in Panama. Also, many young children live and work in Panamanian homes in order to attend school there.

Other changes have affected all segments of the San Blas population equally. These are changes in the organization of the town meeting, and in the way in which commercial activities are handled. Today, many town meetings are partly or completely secularized. There are very few chiefs still living who are qualified as religious specialists in the old way. Many villages have both a "business chief" and a "singing" or traditional chief. A few have made the office of chief elective, with four-year terms of office and universal adult suffrage. The range of tasks organized through the town meeting has been greatly extended, reflecting the demands of local populations for services such as electrification, mail, and air transport. Most of these new tasks are handled through a standing committee system.

Most important from the point of view of economic development has been the growth of *sociedades* or commercial cooperatives. Through their sociedades (which are both public and private) the Cuna are able to pool capital and labor. A great variety of enterprises is organized by them

in this way. The most common are stores, restaurants, commercial agricultural and fishing operations, and trading boats. In the case of one store I investigated the initial capitalization was $4.25, collected through 25-cent contributions from each of seventeen members. After about three years of operation the store had a net worth of $300 to $400. The San Blas sociedades place service to the community and to members ahead of profit-making. They are able to prosper because the region has remained closed to competition from outside entrepreneurs.

Despite the great changes in the level of literacy and the occupational profile of the San Blas population, most individuals continue to live as members of extended family groupings, most girls have an *Inna*, and most women (young and old) continue to dress in the traditional fashion. In the few communities in which modern dress is the standard, the change is not recent but dates from the period before 1925. A general decline in the wearing of nose rings in girls under about seven years of age is noticable, however.

The art of designing and sewing the decorative panels for the traditional *mola* blouses has had its florescence over the past ten to fifteen years. The development of *mola* art is perhaps the best indicator we have of the enthusiasm and confidence with which the Cuna have undertaken the modernization of their culture. A study of the designs of the panels provides visual evidence of the harmonious blending of the old and the new that is Cuna culture at the present time. Many *molas* are deeply religious. Others reflect the fun and excitement provided by novel experiences. *Mola* designs are taken from the labels on cans, off playing cards, out of newspapers, and from political campaign posters.

The 1925 Revolt and the Reforms of Nele Kantule. The history of San Blas modernization in this century is not one of gradual, progressive change. The years from 1925 to 1930 were decisive in establishing the direction which San Blas modernization would take over the next two generations.

Shortly after Panama obtained its independence from Colombia in 1903, the government adopted an Indian policy which aimed at the economic incorporation of the Indian regions within the national system and the rapid acculturation of the various tribal populations. As a result of this policy the San Blas Cuna were subjected to extreme pressure in the decade 1915–1925. Contracts were let to outsiders for the commercial exploitation of regional resources and Panamanian National Guardsmen were stationed on a number of islands. A small minority of villages cooperated actively with the government. The remainder became increasingly hostile as land alienation proceeded and abuses by Guardsmen increased. In 1925 a large group of islands revolted—a success which resulted in the restoration of the region's political autonomy and territorial integrity.

Women dancing with musical instruments, apparel and ornaments that are typically Cuna. (Photo by F. Louis Hoover.)

The story of the 1925 revolt is one of those odd turns with which history provides us from time to time. A rebellion of sorts was bound to have occurred, but the form it took and its outcome were profoundly affected by the presence in the area at that time of an American explorer, Richard O. Marsh. As Marsh listened to the Cuna stories of Panamanian abuses, he became a man with a cause. He decided that the only solution to the situation was for the San Blas region to be placed under U. S. trusteeship, with an American "of the highest character" appointed administrator. To this end Marsh returned with a group of Cuna to the United States where he marshalled considerable support for the Cuna cause. The Panamanian view of Marsh's activities is that he wanted to establish himself as ruler of an independent San Blas. It is probable that Marsh did see himself as the future American administrator of high character.

Returning to San Blas, Marsh assisted one of the inter-island chiefs, Nele Kantule, in developing the military strategy of the revolt. In one day of action in February 1925 the Cuna forces surprised and either massacred or routed all of the National Guard stationed in the region. When Panamanian reinforcements arrived in the Gulf of San Blas they found a U. S. cruiser at anchor with the United States ambassador and several officials of the Panamanian government on board. A treaty was drafted under which the Cuna recognized Panamanian sovereignty in return for guarantees of their internal autonomy.

Between 1925 and 1930 Nele Kantule, leader of the revolt, organized his followers into a small "Cuna nation." He hoped that his government would eventually extend over the entire region, but Cuna unification was not actually accomplished until 1945, when the San Blas communities adopted their present confederal constitution. Nele and his followers did bring about far-reaching changes in San Blas culture, however. There is not space to go into detail concerning the life and accomplishments of this remarkable man who more than any other individual was responsible for the ideas and innovations which facilitated San Blas' modernization over the past generation.

Nele used the breathing space created by the success of the 1925 revolt as an opportunity for strengthening San Blas society. It was his conclusion that the Cuna problems of the early part of the century had their roots in the increas-

ing dependency of his people on outsiders for goods and services. His solution did not take the form of a movement to eliminate foreign cultural influences and return to some version of Cuna life of the past. Instead, he put forward a very explicit and detailed program of reorganization, aimed at incorporating the borrowed activities and values within the framework of traditional Cuna culture. To this end he proposed two very important innovations (among many others)—that the local town meetings undertake many new, secular activities; and that the people of each town undertake the organization of the many commercial activities for which they were by that time dependent upon outsiders. He preached to his followers that Cuna political and economic independence in the future would depend upon the ability of the Cuna population to master basic technical and literacy skills. To Nele and his followers modernization was not a goal, but a means to a traditional goal—the continued preservation of the Cuna way of life.

Nele Kantule was not an acculturated man. He was both illiterate and monolingual. Although he was a man of great personal charisma and genius, these personal traits alone cannot account for the appropriateness and far-sightedness of his many reform measures. Nele was the product of an excellent educational system—that of traditional Cuna culture. His studies included several years spent living with acculturated Cuna outside the San Blas region. From these men this monolingual Indian learned about the ideals of Simon Bolivar, the empire of Queen Victoria, and the federal democracy of the United States. His own government in later years was modeled after his understanding of the American system. The Cuna tradition also placed great emphasis on political astuteness and Nele was by training as well as inclination a sophisticated politician.

The Cuna town meeting and the traditional educational system together provided effective and flexible cultural devices for handling problems arising from a continually changing social environment. It seems probable that the relationship between the Cuna and their chiefs which exists through the town meeting system is a very old trait of Cuna culture, and that it has served them well as an adaptive mechanism for several centuries. We are not used to looking for evidence of social engineering and directed change in preliterate societies. Perhaps it has been a more common occurrence in the history of mankind that we have thought. The capacity of the human mind for problem-solving is a trait characteristic of *Homo sapiens*. Where the social system provides exceptional minds with the necessary information and the necessary freedom to choose we can expect that those minds will produce original and realistic solutions to problems. Although in the long run it is possible to ignore the individual decision-maker as a factor in history, and to consider only gross permissive and limiting factors such as ecology and technology, this does not mean that human choices are irrelevant to the progress of particular peoples at particular moments in their histories. The story of the San Blas Cuna in the 20th century is the story of the interplay of history, culture and the individual.

Honor Museum Volunteers

COLUMBIAN half-dollars were presented to five men and 44 women volunteers last month to mark the Museum's 75th Anniversary and express appreciation to volunteers for their service. The silver coins, struck in 1892 and 1893 in observance of the Columbian Exposition, are now collectors' pieces. Presentations were made at a reception hosted by Museum Director E. Leland Webber and Mrs. Webber.

During 1968, volunteers contributed 4,001 hours of time to the four scientific departments and Raymond Foundation, the educational department. Twenty-five volunteers aided Raymond Foundation staff lecturers by qualifying themselves to conduct some tours for visiting groups.

The volunteers averaged 12 hours of service a month but the individual contributions ranged from two to more than 65 hours a month. One volunteer honored was Mrs. Hermon Dunlap Smith, who began in 1936 and was named an associate in the bird division for her outstanding work with the collections. During World War II, when many scientists were in the armed forces, Mrs. Smith's efforts kept the bird division open. Mr. Sol Gurewitz, who works in the Anthropology Department, was cited for donating nearly 800 hours of time in volunteer work during 1968.

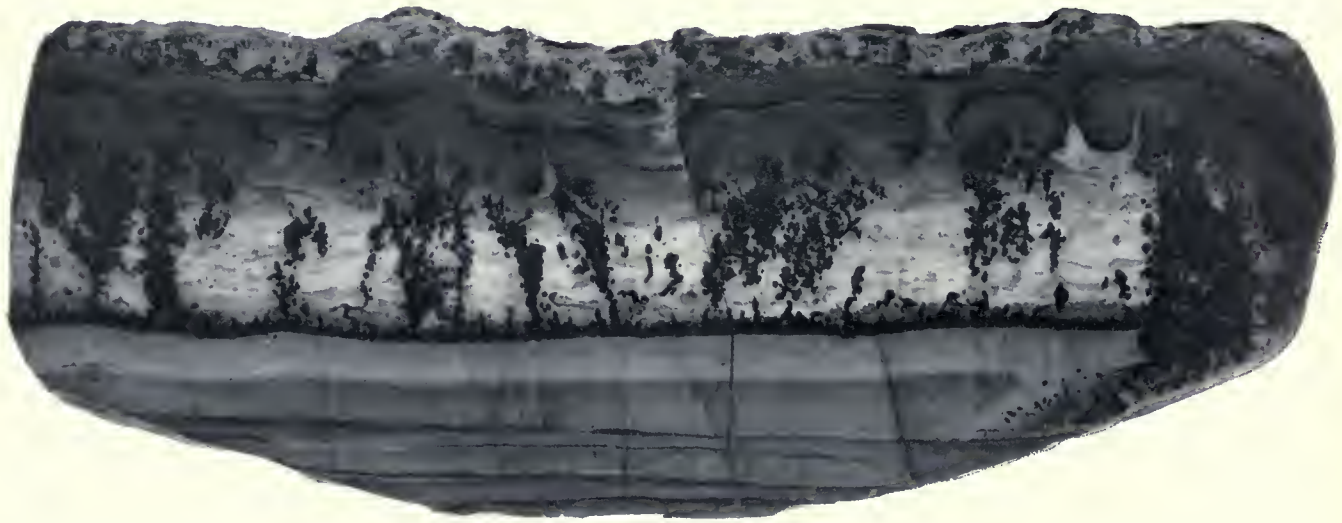
Those receiving Columbian half-dollars at the volunteers' reception include: Mrs. Richard Bentley, Mrs. Thomas D. Burke, Jr., Miss Nora Chandler, Mrs. John Randolph Crews, Mrs. Henry Dry, Mr. Stanley J. Dvorak, Jr., Dr. Margaret Elliot, Mrs. Robert O. Elmore, Mrs. Winston Elting, Mrs. Wendy L. Farber, Rev. Dwaine W. Filkins, Mrs. Charles Fuller II, Mrs. Joseph Girardi, Mr. Sol Gurewitz, Miss Gertrude M. Hannen, Mrs. Robert C. Hyndman, Mrs. Rudolph Karall, Mrs. Clarence Kenny, Jr., Mrs. Robert T. Keppler, Mrs. Lorraine Kratz, Mrs. Donald Kropp, Mrs. Wallace D. Mackenzie, Mrs. John Maris, Mrs. H. F. Matthies, Mrs. Lawrence C. Morris, Jr., Mrs. Seymour Nordenberg, Mrs. Ronald A. Orner, Mrs. Harry O. Owen, Jr., Mrs. Philip Y. Paterson, Mrs. Herman J. Pfeifer, Miss Mae Provus, Mrs. Harold M. Ross, Jr., Mr. Sol Sackheim, Mrs. A. R. Sarabia, Mrs. Eric J. Schneider, Mr. Wayne Severn, Mrs. C. William Sidwell, Mrs. Henry Sincere, Mrs. Hermon Dunlap Smith, Mrs. James G. Speer, Mrs. Clement F. Springer, Jr., Mrs. John Stephens, Mrs. Allen W. Swenson, Mrs. Thomas S. Tyler, Mrs. Alex B. White, Mrs. Carol S. Williams, Mrs. Philip C. Williams, and Mrs. Marvin Wolfson.

Treasures in the Attic

By John Clark
Associate Curator,
Sedimentary Petrology

Remember when you were a child and spent rainy days browsing through the old stuff stored in the attic? What crazy, wonderful things lay hidden in the piles of boxes gathering dust among the shadowed rafters! My brother and I used to spend many happy hours at this, terminated only by the memorable day when we discovered our parents' courtship letters and recited selected portions of them at the dinner table that evening.

When a great museum like ours has been in operation for 75 years, it inevitably develops an "attic." The organized collections stand in compact rows of massive cases, each with its rank of drawers, each drawer filled with ordered, carefully documented specimens. But at the end of every collection stand a few cases labeled "Miscellaneous," "*Incertae Sedis*," "not catalogued," or in one collection blessed with a forthright curator "usable junk." Here lie the attic treasures of 75 years.

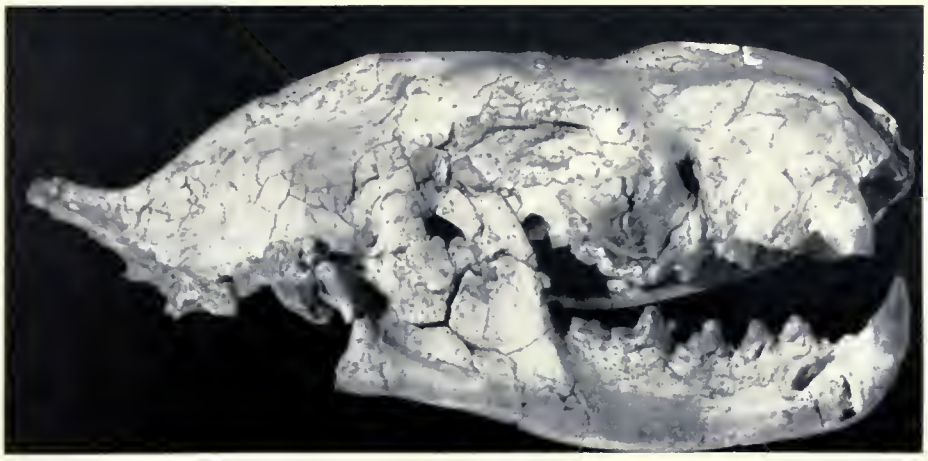


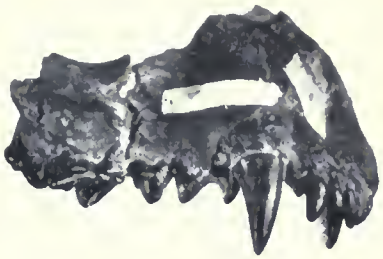
Natural forces acting within sediments produced this so-called "landscape marble," which can be interpreted as looking like impressionistic trees painted against a stormy sky. Once regarded primarily as decorative curiosities, landscape marbles may now provide scientists with information on how substances moving within soft muds contribute to the formation of structures in hard rocks.

Generations of curators have squirrelled them away because they couldn't identify them, or because they had no use for them at the moment but thought that a future curator might have.

It was here, in my own collection, that I found three very ordinary concretions labeled respectively, "Fossil baby?," "Fossil human foot," and "Fossil ham." This was sheer nonsense, of course. Since the concretions were of no significance without locality data, I discarded them.

But the next drawer held a large slab labeled "Landscape Marble," with full data. It had originally been part of an exhibit of ornamental stone. Beautiful gray markings, with trails of brassy pyrite crystals, billowed like the clouds of small atomic explosions through the layers of creamy limstone. Are these perhaps the traces of gas bubbles moving through the age-old, oozy mud while it was just beginning to harden into rock? We don't yet know, but this specimen may give us some of the clues to the processes by which soft muds become





The skull (left) is from Daphoenocyon, *an ancient dog-bear creature. The fossil was recently re-identified after having been mislabeled for years as* Daphoenus, *a rather common ancestor of the dog. A few jaws of* Daphoenocyon *exist in museum collections, including ours. The one at the right corresponds to the upper right portion of the skull. This skull is the only complete one of* Daphoenocyon *known.*

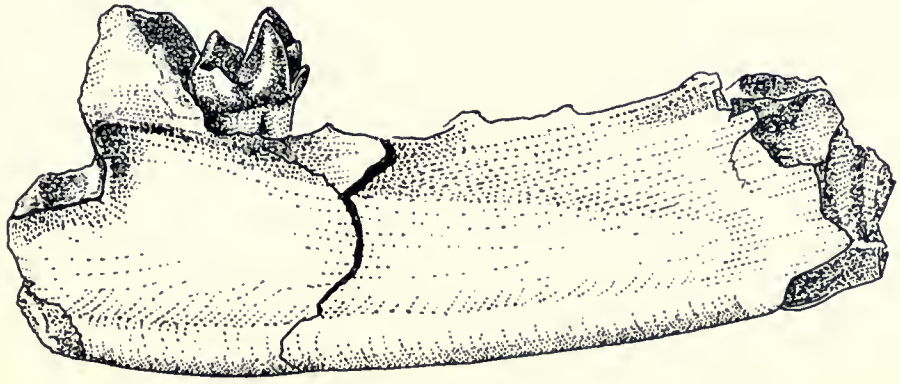
more or less porous hard rocks. If so, the study of ground water reservoirs and of oil and gas reservoirs will be well served by the rock from our Museum's "attic."

About a year after this, my technician and I were relaxing one afternoon—both of us tired from our regular duties, we were spending a happy hour browsing through a drawer of fossil jaws labelled " Oligocene-Dogs? — Miscellaneous." As I picked up one jaw, he yelled "Hey isn't that — ? It's *Cymaprimadon!*" And it was, the second known specimen of a fantastic fossil animal we had found in the South Dakota Badlands that summer. It was a relative of the shrews and moles, but its head was as big as an otter's, it probably climbed trees, and it almost certainly killed its prey with venom inserted by its grooved front teeth. No other museum in the world is known to have any! Now we have two. The aged, crumbling label read, "Dog? Baur collections, South Dakota Badlands, 1893." The man who placed that specimen in our attic has been dead for 60 years.

The next specimen we picked up was a skull and jaws labelled "*Daphoenus*—Chadron Formation—Sioux County, Nebraska 1922." A glance told us that it wasn't the relatively common ancestral dog, *Daphoenus*. This was the strange, primitive dog-bear, *Daphoenocyon*. Several museums have lower jaws, but this was the first time anyone had seen the skull. It had lain all these years concealed by its wrong identification: no one would bother to look at a somewhat battered skull of *Daphoenus* when we had several excellent ones for study.

Our exploring the Museum "attic" had been profitable indeed. A Fieldiana publication now describes our *Cymaprimadon*, and the *Daphoenocyon* skull will be described in a future scientific paper.

Actually, we try to review our miscellaneous collections every few years, in the light of current knowledge. New information enables us to eliminate worthless specimens like the "fossil human foot," identify specimens like the dog-bear that couldn't be recognized before, and read new significance into formerly unimportant things like the landscape marble.



Drawing of Cymaprimadon *jaw which had lain, mislabeled as a probable fossil dog, in a Museum drawer for more than 50 years. The animal it proved to be was identified for the first time in 1967. Field Museum has the only two known museum specimens of this ancient relative of the shrews and moles, a dangerous animal that evidently had a poisonous bite.*

Volunteers Benefit Student Visitors

The volunteer program in education at Field Museum is proving to be as successful as its initiators hoped when it was begun in the fall of 1967 by the Raymond Foundation. Its purpose was to help supplement the regular staff of lecturers who were overwhelmed by the increasing numbers of school groups visiting the Museum each year.

In 1966, over 300,000 people visited the Museum in organised groups. With only five full-time lecturers on its staff, Raymond Foundation could serve only about 20 per cent of these. Even with staff lecturers carrying a full schedule, nearly a quarter of a million young visitors received no help to make their Museum visit more meaningful.

Raymond Foundation relayed its request for help to the then newly-formed Women's Board of Field Museum. Through the board's efforts, the full-time lecturers were ultimately supplemented by 14 dedicated women who volunteer their time and energy in conducting various types of group programs.

The volunteers begin as "greeters," helping direct groups to coatrooms, lunchroom areas and areas of special interest on days when the average number of visiting children is 3,000 or more. Once familiar with the Museum itself and with techniques involved in working with children in a Museum setting, volunteers have the opportunity of increasing their individual skills and techniques, by assisting the professional staff as they conduct programs. Soon the volunteers may take their own groups of very young children on short, simple tours. After work with the professional staff and a concentrated reading program, volunteers are assigned to regular school groups on the same basis as the staff lecturers.

These present volunteers can now offer a total of 22 different programs and as an example of their valuable service, Raymond Foundation notes they conducted 181 tours for nearly 6,000 children in 1968 and during the first three months of 1969 presented 122 tours to 3,417 children. Even so, only 20 per cent of visiting groups are now helped because of a 30 per cent increase in organized group visits over the past two years.

Volunteers are still needed, especially during the fall and spring when the number of groups wishing to participate in Raymond Foundation programs is at its peak.

CALENDAR OF EVENTS

July hours: 9 a.m. to 6 p.m., Monday, Tuesday and Thursday; 9 a.m. to 8 p.m., Wednesday, Friday, Saturday and Sunday.

July 10 Summer Series of Children's Movies "A Crazy, Mixed-Up Dog" The free showings are at 10 a.m. and 1 p.m. in the James Simpson Theatre, sponsored by the Raymond Foundation. The series is offered before and after the Thursday children's concerts sponsored by the Chicago Park District in Grant Park.

July 17 Summer Series of Children's Movies "The Great Swamp" depicts a boy's adventures in swamp country. 10 a.m. and 1 p.m. in the James Simpson Theatre. Admission is free.

July 24 Summer Series of Children's Movies "Living Things Are Everywhere" 10 a.m. and 1 p.m. in the James Simpson Theatre. Admission is free.

July 31 Summer Series of Children's Movies "Nature's Oddities" is the final film in the series. It focuses on unusual animals from many areas of the world. 10 a.m. and 1 p.m. in the James Simpson Theatre. Admission is free.

July 7 – August 29 Guided Public Tours Professional staff lecturers will provide free guided tours to visitors at 2 p.m. daily, Monday through Friday. A movie, "Through These Doors," which shows glimpses "behind the scenes," will be presented at 3 p.m. in the Lecture Hall.

July 9 – October 12 The Art and Life of the Cuna Indians This temporary exhibit explores the history and culture of these people who live on islands off the coast of Panama, and how they have reacted to modern ideas. Hall 9 Gallery.

Through November 16 75th Anniversary Exhibit "A Sense of Wonder, A Sense of History, A Sense of Discovery The free exhibit emphasizes the scope of the Museum's activities since its founding in 1893, following the World's Columbian Exposition. Choice specimens from the Museum collections and examples of current research programs by Museum curators are included in the exhibit. Hall 3.

Through August Summer Journey "Insects" The fascinating world of insects, which has the largest number of species in the animal kingdom, is the subject of the Raymond Foundation's current Journey for boys and girls. The free do-it-yourself tour is open to any child who can read and write. Journey sheets and additional information are available at Museum entrances.

A few openings remain for Field Museum's 17-day Grand Canyon Tour, limited to 28 persons. From September 12-28, Dr. Matthew H. Nitecki, Assistant Curator of Fossil Invertebrates, will lead tour members, with an emphasis on the Canyon's geology. A week-long raft trip on the Colorado River will climax the trip. Cost of the tour, including all expenses and a $200 tax-deductible donation to Field Museum, is $1,025. Reservations may be made by writing Grand Canyon Tour, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois, 60605, or by telephone, 922-0916.

FIELD MUSEUM
OF NATURAL HISTORY
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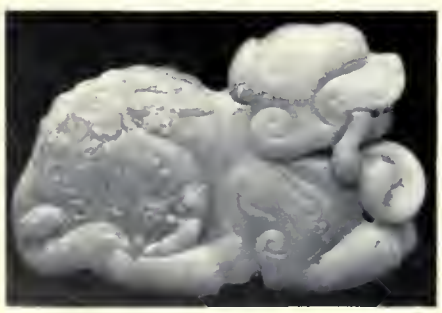


On this month's cover, the mystique of jade: Timeless beauty and appeal are carved into this delicately designed representation of a phoenix carrying a little boy on its back. Carved in soft gray jade, the piece is from the T'ang period, and is shown actual size. The Chinese quotation, from *Shuo Wen Chieh Tzu,* by Hsu Shen, reads, "Jade is the fairest of stones."

The Fairest of Stones

By Elizabeth Alanne
Field Museum Press

Even a very superficial study of jade and its use as an artistic medium brings one quickly to an awareness of the stone's *mystique*, to use a currently popular term. More ancient legends and superstitions surround jade, perhaps, than any other stone among the many gems, stones and metals prized for their rarity and beauty. Regardless of price, the other stones seem to lack the personal impact that jade has had for individuals and, possibly, even civilizations.

Reverence for jade reached its highest proportions in China and the use of the stone is most commonly associated with that country, but jade was discovered and used in several widely separated areas. It was believed to have magical properties and was used in important ceremonies and by persons of high rank.

The Mayas and Aztecs of Mesoamerica used and worked or carved jade, and objects of jadeite were used extensively in religious rituals. Body jades were put in tombs to prevent decomposition of the dead; sacrificial knives were made of jade; and jade, worn next to the skin, was believed to ward off evil spirits and cure disease. It was also used in powdered form as a medicine.

According to legend, these pre-Columbian Indian civilizations valued jade more than any other medium of exchange, including gold. Especially prized was the emerald green shade, which resembled the plumage of the sacred quetzal.

Evidently the tradition of jade carving in Mesoamerica was many centuries old when the Spanish explorers came, and it largely died out after the Spanish Conquest.

The Maoris of New Zealand also had access to jade and carved primitive pieces from it—mainly ornaments, talismans, and weapons which were used by those with prestige and high rank. There is also evidence that peoples in Turkestan, Persia and Alaska revered jade, believing that the ingestion of powdered jade would confer immortality.

But nowhere was jade more important than in China. According to one legend, recounted by Richard Gump in his book, *Jade, Stone of Heaven*, the right to rule China rested in the possession of a particular piece, the Precious Jade of Ho. Ho is described as a poor man who saw a phoenix alight on a rock. Believing the rock to be jade, Ho presented it to three successive emperors. To his misfortune, the first two did not believe the stone was jade, and each had one of Ho's feet cut off. Undeterred, he brought it to the third emperor, a man who recognized the fineness of the stone, accepted the gift and rewarded Ho. One version of the legend says the stone was carved into a *pi* (a flat ring-shaped ritual piece which represented Heaven) and another that it was carved into a seal. In any event, the Precious Jade of Ho has reportedly figured in the wars and upheavals of China since about 9 A.D. It was said to have been taken to Shanghai in 1936, along with

Carvings in the round have appeared in great numbers since the Han Dynasty (206 B.C.–220 A.D.) but are difficult to date because styles have remained quite constant. Animals, natural objects, human figures, and mythological creatures have been consistently popular subjects for jade carvers. Nearly all these pieces can easily be held in one's hand. Dating is approximate for the carvings shown: (From top) *bearded sage, Han Dynasty; reclining horse, T'ang Dynasty; reclining goat, Han Dynasty; a miniature headdress, Sung Dynasty; another reclining horse, Ch'ing Dynasty; and a lion-like creature, not dated but probably Sung or earlier.*

Stylized natural forms made of thin, flat pieces of jade, with some surface design, are typical of early Chinese jade carrings. Top row shows three versions of a tiger; bottom row, from left: *"monster" head, bird, and dolphin.*

other Chinese treasures, to keep it from the Japanese invaders. Its present whereabouts is unknown.

References to the stone's political significance stand a poor second to the testimonies for its value to the individual, however. Of utmost importance in understanding its *mystique* in China is the fact that the Chinese believed jade was an intermediary between Earth and Heaven. It was this quality that was worshipped, not the stone itself.

Originally, jade was used in China for making ritual objects and sea's and insignias for kings and nobles. Jade jewelry was apparently introduced during the late Chou period (600–221 B.C.) and by the 18th century, the use of jade for personal adornments and decorative purposes far outweighed that used for ritual objects, although these were still used on formal occasions. The use of jade for purely decorative purposes was probably at least partially due to an increased availability of the stone. Nevertheless, the use of jade was largely restricted to royalty until well into the 19th century.

The use of jade was by no means limited to the outside of the man. Powdered jade, mentioned in connection with other civilizations, was a very popular medicine in China. Doses of powdered jade were swallowed to obtain a variety of highly-desirable results: as a cure-all; for prolonged life; to obtain powers of invisibility and levitation; to prevent one from being thrown from a horse; to ward off evil; and, in large amounts, it conferred immortality. It might be interesting, on quiet, rainy evenings, to ponder the possible amount of jade that disappeared into alimentary canals over the centuries for these reasons.

In the strict geological sense, what we know as jade may actually be either of two separate substances, nephrite and jadeite. Its occurrence is restricted in that individual deposits are isolated, although these may occur in widely separated parts of the world. Oddly enough, neither nephrite nor jadeite has ever been known to occur in China, the country in which it has had the most widespread use.

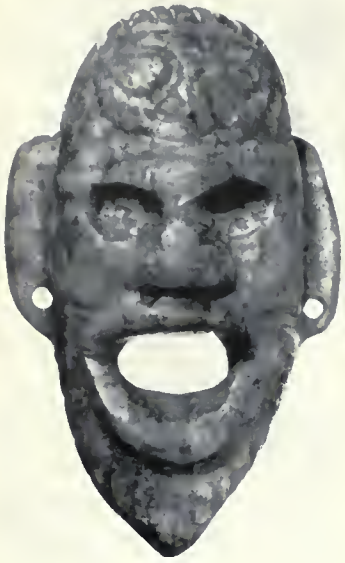
The original source for Chinese jade was probably a nephrite deposit in the K'un Lun Mountains in what was Chinese Turkestan. It has also been found in Siberia, British Columbia, New Zealand, Poland, Japan, Italy, Southern Rhodesia and Brazil, and in Alaska, California, Washington and Wyoming in the United States. Jadeite is known to occur only in Burma, Mexico, California and Guatemala. Although the list of sources seems imposing, many of the deposits have jade of poor quality or have very small amounts of high quality stone which are quickly used up.

Nephrite is the more common of the two types of jade. It is a silicate of magnesium, fibrous, hard to fracture, and soapy in appearance. There are two types of nephrite: actinolite, which contains iron, and tremolite, which contains little iron. Both are called nephrite, just as nephrite and jadeite and both called jade.

Jadeite is a silicate of sodium, more easily broken than nephrite and able to take a more brilliant shine when polished. In its uncarved state, jadeite has an oxidized shell which makes it very difficult to judge the quality of the stone. The composition of Mexican jadite is slightly different from Burma jadeite, which is called "gem quality." Jadeite was not introduced into China until after 1784.

Despite these differences in composition, nephrite and jadeite are similar in appearance to one another and there is a wide range of colors in both.

Those unfamiliar with jade often tend to think of it as being only green and, indeed, the "gem quality" jade found in some jewelry is the deep, rich emerald green found only in jadeite. Jade in its pure state, however, is white. It is an iron impurity that gives it its variety of hues. Some shades of color appear exclusively in nephrite—the whitish "mutton-fat" and "spinach" green flecked with black—while "emerald" green, mauve and light blue are peculiar to jadeite. The Chinese recognized hundreds of fine gradations of color and have given many of these highly imaginative names. Calling upon the animal, vegetable and mineral kingdoms for inspiration, jades of various shades



Small jadeite mask, probably from the Valley of Mexico, is an example of the vigorous carvings produced by the pre-Columbian Indian civilizations of Mesoamerica. Unlike the Chinese, the Indians had no metal tools and had to rely on less efficient instruments.

Even today, many jade deposits are in difficult areas to work and are expensive to mine. Weather is a factor, for instance, in Burma where mining operations can only be carried on successfully from March to May.

No small part of jade's *mystique* is in its artistic possibilities.

"Jade is tough, hard and heavy; it takes and keeps a good edge; its fine colors and polished surface must have been the pride and joy of craftsman and warrior alike."[1]

We have mentioned carving frequently without describing this important craft, which in most cases determines the value of a piece of jade. In China the position of the jade carver was analagous to that of a goldsmith in Europe, much as jade held the position of value in China that gold does in the Western world.

Jade is, in fact, not literally carved but is formed through the use of an abrasive. It resists chiseling, but it can actually be cut with sand, water and a piece of string as the only tools. This method is used to cut large boulders of jade into smaller pieces, using the string as a two-man saw.

[1]Hansford, S. Howard, *Chinese Jade Carving*, p. 57.

A green nephrite spoon, Ming period. Jade vessels for serving food and drink became popular under the Mongol rulers (Yuan Dynasty), emperors who stressed the practical, even in the use of jade.

are identified as: "chicken bone," "rice," "ivory," "young onion," "pearl," "egg," "apple," "imperial," "peach," and, in the case of the two-tone jades, such picturesque phrases as "sky-after-the-rain" and "moss-entangled-in-the-snow." The color range includes yellows, greys, greens, browns, reds, and more rarely, mauves, blues and pinks. Colors are frequently mixed with white in a single piece of jade, creating a cloudy two-tone effect. Almost every piece of jade, therefore, has its own individual color characteristics.

Lumped under the name jade, nephrite and jadeite both possess toughness, a strangely attractive "coolness" to the touch, and an affinity to exquisite carving work.

The small size of the earliest jade carvings are indicative both of the limitations of early tools and of the scarcity of the stone, not only in its natural state, but in the amount that could be successfully mined. Evidently the first pieces used in China were actually pebbles, fished out of streams that carried bits of jade from its mountain sources.

In the mountains, primitive—and often wasteful—methods were used to obtain the stone, such as heating it by fires during the day so that the jade might be cracked by the cold night temperatures acting upon it, and other similar methods.

This Maori hei-tiki *neck ornament is unusually large, about 8½ inches high, but the design is one often repeated by the native jade carvers of New Zealand. This specimen, with abalone shell inlays, is from the A. W. F. Fuller Collection.*

Earliest carvers probably used quartz sand and water, a very slow abrasive, in working jade and their finished pieces were usually flat, and thin with some surface relief.

Carving in the round—which included vessels for food, statues and many personal adornments—were not done until after the advent of the rotary tool. The discovery of the treadle-wheel also made jade carving easier and increased the artist's freedom since he no longer had to use one hand to hold the piece while working it with the other. The introduction of harder and more efficient abrasives over the years also produced changes in aspects of the jade working craft. When S. Howard Hansford visited Peking in 1939, carborundum, which came into use between World Wars I and II, was the most widely used abrasive, but other, older ones were also used for special effects. Some connoisseurs of jade carving believe that pieces worked with sand, crushed garnets or corundum, the slower abrasives, show more control of the carving and produce a finer finish.

The carver's tools have remained largely unchanged over the years, consisting of drills, gouges and grinders, used with the treadle wheel. The Chinese have had the use of metal tools and diamond points on some of their tools for many centuries.

In Mesoamerica, jade workers produced some excellent pieces without the benefit of metal tools, which were not introduced until after the Spanish Conquest. Bone, wood and even cactus needles were evidently used by jade carvers in the pre-Columbian Indian civilizations.

One of very few jades from the long transitional period in Chinese history, which saw many short-lived dynasties, is this beautifully designed and crafted white jade lady, Wei period (about 386–589 A.D.). Despite apparent internal turmoil, the period was a creative one which brought the first landscape paintings, prose literature, and advances in the jade carving art.

Incredibly intricate and delicate openwork is an example of the elaborate designs popular during various periods of jade carving. White nephrite incense burner is from the Ming period.

When brought to a carving shop, the stone is carefully examined for flaws and quality before being cut into smaller pieces. The artist will study one of these cut pieces until he decides what design will best suit its individual qualities. The design is drawn on the stone and an apprentice will "rough cut" the stone. If flaws appear, the design must be changed or reworked. The artist then begins the laborious fine carving process, slowly forming the jade by use of abrasives and the various tools of his craft. Polishing is the final step, accomplished with a "secret" paste called *pao yao* and the use of leather polishing wheels and points.

Jade carving is a highly regarded craft and there is a long period of apprenticeship involved in becoming an expert. Many carvers become so specialized that they do only one type of carving, such as making rings, or doing a particular type of openwork design.

Jade's history as an utilitarian and artistic medium indicates that even prehistoric man appreciated its workability. Neolithic tools have been found in China, apparently made near the jade source in Turkestan and brought into China. The pieces are usually tools or weapons, but a few are believed by some scholars to be ritual pieces.

The dating of Chinese jade artifacts is a very tricky business. "There is no branch of Chinese antiquarian studies so deficient in reliable chronological data as that of the jades. . . ."[2]

Most ancient jades have turned up in markets or were sold to dealers or collectors by individuals. They were found by farmers while plowing, or carried off from a site by tomb robbers, and in various ways removed from their original settings without any scientific supervision or documentation. Dr. Kenneth Starr, Curator of Asiatic Archae-

[2]Hansford, *Chinese Jade Carving*, preface.

ology and Ethnology, notes that in recent years there has been a great deal of scientific excavation and dating of ancient jades by Chinese archaeologists. Although China is closed to American scientists, the reports of these findings appear in professional journals.

For the most part, jades are assigned to periods by styles in which they are made, and they reflect the tastes of a specific period. Animal carvings are an exception, because their form and styles often reflect the peculiarities of the particular pieces of jade used, rather than the will of the craftsman.

Judging from the earliest carved jades known from China, the tradition of jade carving was already established by the Shang Dynasty (?1523–?1027 B.C.). Characteristic of this period are thin representational weapons, tomb jades and accessories of early nature worship. The thin, flat stylized form of carving persisted into the middle of the following Chou Dynasty (?1027–221 B.C.). Whether this was due to technical limitations and the scarcity of jade or because of tradition is unknown, but carvings in the round are very rare during this time.

In the late Chou period, the designs on jade pieces shifted from simple to extremely ornate, so much so that some of the objects are unrecognizable.

Many jades were destroyed during the brief reign of the Ch'in Dynasty emperor, a man who wished to eliminate all records of previous emperors.

A renewed interest in naturalism and return to simpler design occurred during the Han Dynasty (206 B.C.—220 A.D.). Sculptural full rounds appeared, an indication that the rotary tool had come into common use.

The next 400 years were transitional ones, filled with turbulence, and the history of jade carving is obscured. Establishment of the T'ang Dynasty (618–907 A.D.) ushered in an opulent period with jade appearing in many personal adornments, such as belt buckles, combs and jewelry.

The pendulum swung back again during the Sung Dynasty (960–1279 A.D.). Interest in ancient forms and designs continued but the lavish ornamentation was replaced by simpler, sturdier pieces.

Jade carving reverted to realism and practical uses under the Mongol rulers of the Yuan Dynasty, but at the sacrifice of Chinese symbolism in design and form. Jade was used increasingly for bowls, cups and other pieces used for serving food.

In the Ming Dynasty (1368–1644 A.D.) which followed, jade working on the whole was expanded, but, under the influence of Confucianism, artistic creativity was restricted. A few new forms emerged, including the first few snuff bottles and an assortment of muscial instruments of jade—flutes, bells and chimes.

Two enduring ritual designs found in Chinese jade carving are the ts'ung (left), *the symbol for Earth, which appeared during the Chou Dynasty, and the* pi (center), *the symbol for Hearen, which has been constant in jade carving since neolithic times. The early ritual jade* (right) *is probably a knife blade, with holes beliered to be used for lashing the object to a handle.*

The elevation of the jade carving art to its highest level occurred in the Ch'ing Dynasty (1644–1911 A.D.). The emperor K'ang-hsi (1662–1722 A.D.) established jade carving studios on the palace grounds. The demand for and interest in jade carving increased greatly. Some of the largest jades ever made emerged from these palace studios in the reign of a later emperor Ch'ien-lung (1736–1795 A.D.), although he personally favored, small, delicately carved objects in pure white jade. The artists were encouraged to be as creative as they wished in developing the possibilities of jade as an artistic medium. It was also during his reign that jadeite was introduced into China.

From the close of Ch'ien-lung's reign through the present innovations in jade working and carving have not been notable. Much as the rise and fall of hemlines is cyclical, ornamentation on jade pieces shifted from the simple to the extra-elaborate from time to time, but the designs and general approach to working the stone have remained essentially unchanged.

While jade has had a long history of use in China and in ancient civilizations elsewhere in the world, its entire "history" as an item of any importance in the United States could be contained in the memory of a person now living.

The western world as a whole seemed disinterested in jade for hundreds of years although there were certainly individuals who were aware of its existence and use. Marco Polo, the Venetian merchant who spent many years in China, must have realized the esteem the Chinese held for jade, yet it apparently had no value for him since he did not introduce it into Europe when he returned. Spanish sailors connected with the conquest of the New World purportedly carried bits of jade as a superstitious protection against kidney ailments, but the Spanish nobility, who coveted a great many things they found in the Americas, were apparently unimpressed by jade even though the Aztecs placed it high among their treasures.

Not until the Boxer rebellion in China at the turn of the century did pieces of worked jade begin to appear in the United States in any numbers. Brought back by American soldiers who fought there, and later by missionaries who went to China, it affected whatever caprice dictates the moods and fancies of art collectors and it experienced a mercurial ascent into favor. This popularity is presently combined with a relative scarcity of the stone, particularly jadeite. An embargo on trade of any items from Communist China interdicts the importing of all jades from the Far East that cannot be proven as coming from outside China.

Uninfluenced by any religious or superstitious traditions, in America the value in jade lies with the individual finished object. The quality of the stone, the artistry of the design, the workmanship, and the age of the piece are all factors in determining its worth.

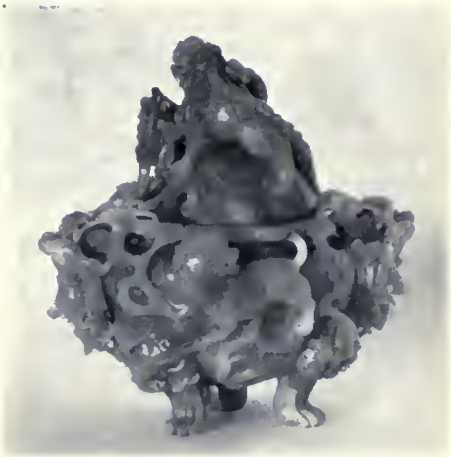
Still, the stone has a *mystique* for Americans as well as Chinese. Virtually unknown here a century ago, jade is sometimes now as costly as diamonds. C. D. Peacock, Chicago's oldest retail jewelers, reports that the demand for jade jewelry is increasing every year and the market value of the stone is at its highest level in history. However, the price range for jade jewelry is astonishingly wide. One can buy a jade ring for $125 or for $17,000. A string of polished nephrite beads may cost up to $20,000. As with other jade carved pieces, jewelry is evaluated individually in terms of the quality of the stone, its color, its size and the finished piece, including the use of other valuable materials. Jade is ill-suited to mass production and the will of the artist must bend to the nature of the stone. It is not only the fairest of stones, but perhaps the most demanding as well.

A major American figure in the early study of jade and jade carving was Berthold Laufer, who began his career with the Museum in 1907 and was Chief Curator of Anthropology from 1915 to 1934. His monograph *Jade*, published by Field Museum Press in 1912, was a pioneer work in its field. Laufer's enthusiasm for and interest in jade led to the acquisition of about three-quarters of Field Museum's jade collection, one of the finest in the United States. Fortunately, the collection was developed when there were still many pieces available representing not only the various periods of jade carving in China, but the many variations of color and quality found in jade as well.

The foundation of the jade collection was acquired by Laufer on two separate expeditions to China, the Blackstone Expedition in 1908–1910 and the Marshall Field Expedition in 1923. The largest single acquisition, at least half the present collection, was the Bahr Collection, purchased in 1927. This was made possible primarily because of a large contribution from Mrs. Frances Gaylord Smith, who later bequeathed her personal collection of jades to the Museum as well.

During the next six months or so, the Hall of Jades will be closed so important arrangement and labeling changes can be made to conform with more recent discoveries made in the field of dating these artifacts.

From the ancient, flat-cut ritual *pi*-rings to an intricately carved censer of modern times, the history of jade is contained in the Hall of Jades. As for its *mystique*, this lies within the fairest of stones and in the eye and mind of the beholder.



Virtually unrestricted freedom of artistic expression was enjoyed by jade carvers of the Ch'ing Dynasty, many of whom worked in studios on the palace grounds. Jade was utilized in many ways—not always with the most pleasing aesthetic results, however, but with an eye to exploring every artistic possibility of the stone. Such diverse pieces emerged as (from top) *an unornamented translucent bowl of rare blue jade; representation of natural forms in a "jade mountain" placed on a carved wood pedestal; and an elaborately carved green censer dominated by mythological lion-dogs and stylized plant forms.*

REFERENCES

Gump, Richard, *Jade, Stone of Heaven*, Doubleday & Co., Inc., Garden City, New York, 1962.

Hansford, S. Howard, *Chinese Jade Carving*, Lund Humphries & Co., Ltd., London, 1950.

Sixth Year for Childrens' Fall Workshops

An opportunity to meet staff members and work with specimens and materials from the Museum's scientific collections will again be available in a series of fall workshops for the children and grandchildren of Museum Members. Designed by the Raymond Foundation to stimulate interest in the study of natural history, the workshops provide small group instruction in a variety of topics for various age groups. The Saturday programs last about one hour for younger children, and about one and a half hours for older ones. Extra time should be allowed if specimens are being brought for identification.

Reservations are necessary and an application is included below. We urge that these be sent in early since the size of each session is limited. Each applicant will be scheduled into one program only and reservations will be accepted in the order in which they are received. Applicants accepted will receive a confirmation card which will admit them to the workshop.

October 4

Life in an Old Dead Tree

George Fricke, Leader

For ages 5–7 — 10:30 a.m.
Parents are also invited — 1:30 p.m.

This program for family groups shows the different kinds of animals that might make their homes in an old dead tree and the ways in which they take advantage of the protection it offers.

October 11

Indians of Woodlands and Plains

Harriet Smith, Leader

For ages 8–11 — 10:30 a.m.

Indian tribes developed ways of life adapted to their special environments and in doing so, showed great skill in utilizing natural materials to suit their needs. In this workshop, youngsters will handle various naturally-occurring raw materials and learn how the Indians used them in making tools, weapons and household equipment. Movies of Indian life in both the woodlands and on the western plains will be shown.

October 18

Prehistoric People of Illinois

Harriet Smith, Leader

For ages 12–16 — 1:30 p.m.

An opportunity to handle both actual prehistoric Indian tools and the raw materials from which they were made is a feature of this workshop. In addition to learning about ways these people adjusted to life in their environment, the

session includes practice in identifying and sorting materials according to how they would be found at an actual "dig" and a discussion of what can, and cannot, be learned from the archaeological record.

October 18

Boneyard Managerie

Ernest Roscoe, Leader

For ages 6–8 10:30 a.m.
1:30 p.m.

This workshop will "rattle the skeletons in a few closets" by discussing the prehistoric relatives of familiar animals found in zoos and aquaria. Children should be accompanied by at least one parent. Be prepared for a few surprises!

October 25

Caveman to Civilization

Edith Fleming, Leader

For ages 10–13 10:30 a.m.

A movie on the life of the cave men and how they hunted prehistoric animals opens this workshop. Boys and girls will also examine actual tools used by cave men thousands of years ago, learn how they were made and compare them with modern tools.

November 1

Bones to Bodies

Ernest Roscoe, Leader

For ages 6–8 10:30 a.m.
Parents are also invited

This workshop emphasizes the structure of the vertebrate skeleton. Specimens and Museum exhibits will illustrate the important points of the subject.

November 8

Earth's Changing Crust

Ernest Roscoe, Leader

For ages 6–8 10:30 a.m.
Parents are also invited

How mountains are formed and worn down, how caves are made, how a geyser works, how volcanoes are formed, and why glaciers move will all be discussed in this workshop. The program will help you to understand the geology of natural surroundings both at home and on your travels.

If there is more than one child in your family who wishes to attend a workshop, please make a duplicate application for *each* child.

FALL WORKSHOPS FOR MEMBERS' CHILDREN

SATURDAYS in the MUSEUM, 10:30 a.m. and 1:30 p.m. See article for details on programs. Please list the program you wish to attend in order of your preference. Sorry, only one program can be scheduled for each child.

	Program	Date	Hour
1st choice	_____	_____	_____
2nd choice	_____	_____	_____
3rd choice	_____	_____	_____
4th choice	_____	_____	_____

Name _____ Age _____ Tel. _____

Address _____ City _____ State _____ Zip _____

Membership in name of _____

Cut along dotted line and mail to:
Raymond Foundation, FIELD MUSEUM OF NATURAL HISTORY Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605

THE 17-YEAR CICADA:

A Four-Year "Mistake"?

By Henry S. Dybas
Associate Curator, Division of Insects

An adult 17-year cicada suspended from the nymph skin from which it has just emerged. It emerges in the evening and by morning will have darkened and will fly to the treetops. (Photo by Lee Jenkins.)

Very early this June, we began to receive calls at the Museum about the emergence of 17-year cicadas, commonly called "locusts." We soon realized that off-year cicadas were emerging in many parts of the Chicago area in unprecedented numbers, four years ahead of schedule. Nothing on this scale had ever been reported in the hundreds of technical papers written about these insects. Something very unusual was happening.

The emergence of periodical cicadas in 17-year cycles is well-documented. An entry in Thomas Jefferson's *Account Book* for the year 1775 mentions their appearance in Virginia that year and recalls their previous emergence in 1758. Emergences in 1741 and 1724 and are also cited on the testimony of a Dr. Walker. Other early observers independently reached the same conclusion as Jefferson that "it appears then that they come out periodically once in 17 years." Even today, 200 years later, this is by far the longest life cycle known in insects.

The 17-year periodical cicada populations in eastern North America do not all emerge above ground at the same time. Each has its own particular 17-year schedule and its own geographic territory. Jefferson's brood (called Brood II by entomologists) occurs on the Atlantic seaboard from Connecticut to North Carolina. It last appeared in 1962 and is scheduled next in 1979. The only northern Illinois brood is Brood XIII, which last emerged in 1956 and is due in four years (1973). In the South, the same cicadas—as nearly as anyone can tell by looking or listening to them—appear on a 13-year schedule. Like the 17-year variety, these occur in different broods, each emerging in its own particular year. No intermediate cycles of 14, 15, or 16 years have ever been found.

The precise interval of 17 years between successive emergences has been repeatedly confirmed so many times in all the known populations of periodical cicadas that it permits long term predictions of a kind virtually unique in field biology. Dr. Monte Lloyd of the University of Chicago and I were able to plan our 1962 field work in Virginia well in advance, with complete confidence that the cicadas would appear exactly on schedule—and they did.

At the end of a 17-year cycle, periodical cicadas characteristically appear in such enormous numbers that they satiate all the birds and other predators and still leave a comfortable surplus for reproduction. Biologists believe the tightly-synchronized mass emergence is a key element in this insect's survival. If the same number of cicadas were spread out over several years, the argument goes, they would probably nearly all fall victim to their enemies, leaving few for reproduction. All kinds of predators—other insects, snakes, racoons, skunks, grackles and crows—seem to ignore everything except feeding on cicadas. One night I had to interrupt my studies to forcibly take my dog back to the car because he was gorging himself so on emerging cicadas that I became concerned.

Cicada numbers can be estimated with considerable accuracy by counting emergence holes in the ground. In the last emergence in the Chicago area, we found 133,000 per acre (about 200 by 200 feet) in the upland woods in our study area. In the adjacent floodplain we found the record number of a *million and a half per acre!*

The periodical cicada should not be confused with the annual cicadas which produce the characteristic "buzz-saw" sound in the treetops on hot summer days. These are predominantly black and green and do not have the red eyes and orange wings of the periodical cicadas. They are annual in the sense that some individuals appear every year but require a number of years, presently unknown, to develop underground.

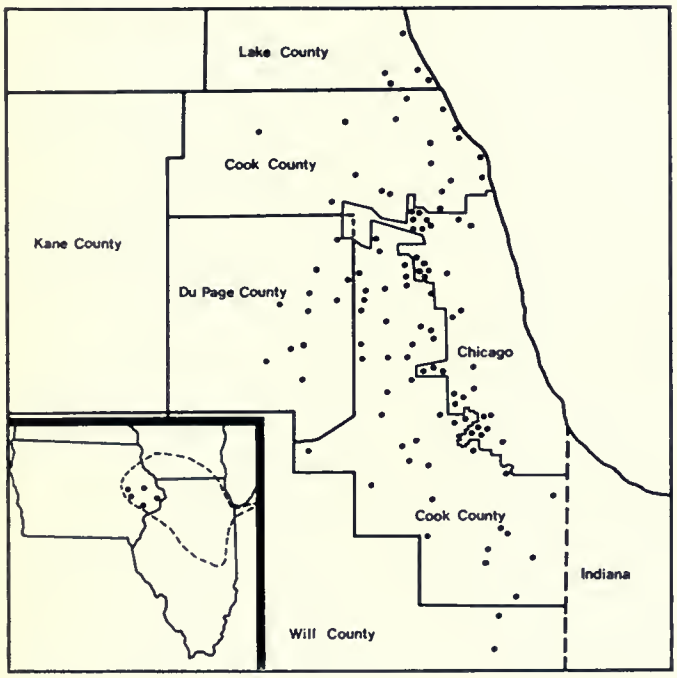
Occasionally, individual periodical cicadas come out during the wrong year. Since the 1956 emergence in northern Illinois, we have recorded about a dozen stragglers in the Chicago area. They obviously represent only a trivial fraction of the local population and also may be at a great disadvantage compared to cicadas coming out in a normal emergence year in that they rarely survive the attacks of their enemies long enough to leave any offspring.

This June it quickly became apparent that the emerging

cicadas were too numerous to be stragglers. Through the mass media, we asked individuals for information on periodical cicada activity in their neighborhoods and we got an astonishing response. More than 500 persons ranging in age from five to 86, took the time to supply us with information or specimens. Chicago and more than 80 communities ringing it were represented. Many reported only a few specimens but others reported thousands. One pair of keen observers in Hinsdale, a 10-year-old girl and her brother of 9, wrote me that they collected 2,350 nymph skins in a small area and offered a shoe-box-full as proof. (We accepted and confirmed the count.)

An empty nymph skin is tough, lasts a long time, and is the best evidence for emergence. The skin represents the stage that develops underground enclosed in an earth cell and sucks sap from tree roots. Normally, in the 17th year, the nymph emerges from the ground, leaving a smooth, round hole about ½-inch diameter, and crawls up a nearby tree trunk or plant stem. It fixes itself firmly, the skin splits down the middle, and the soft, creamy white adult, with red eyes and black patches on the back, emerges. The crumpled wing pads are pumped out and wings fully expanded, the body becomes hardened and colored, and the next morning the adult works its way to the treetops, leaving the empty nymph skin behind. The shells eventually drop to the ground very near where they had originally developed underground. In previous studies, Dr. Lloyd and I worked out techniques for extracting much information from measurements of the skins and from their numbers and distribution.

Empty nymph skins are evidence for the emergence of 17-year cicadas. These skins are approximately natural size.



Each dot represents a community reporting emergence of premature 17-year cicadas in June, 1969. A dot may indicate one or many reports, some consisting of hundreds of specimens. Communities which reported cicadas are listed on Page 12, although some may have been accidentally overlooked in this preliminary listing. The range of Brood XIII is shown in the inset (left) *by dashed lines. Dots indicate premature 1969 cicadas in Iowa.*

The fact that the cicadas appeared 13 years after the previous (1956) emergence could suggest they were 13-year cicadas (and they were so interpreted in one newspaper article) but there is no history of a 13-year brood in this area and the emergence was 100 miles north of the nearest 13-year brood. Cicadas can expand their ranges only very slowly and there is no possibility that this could represent a recent undetected range expansion of 13-year cicadas.

It is inconceivable that this June emergence could represent a previously unknown brood of 17-year cicadas in the Chicago area. It would have appeared in 1935 and most recently in 1952 and there are no records of such a brood. In a densely populated area such as this it could not have escaped notice.

The only remaining conclusion is that these are genetically 17-year cicadas derived from the 1956 emergence of Brood XIII that have emerged in 13 years, four years ahead of schedule. Thanks to the cooperation of many people who supplied information, the evidence for this is very strong. First, all reports are from within the known range of Brood XIII. Secondly, most people who had lived at their present address in 1956 reported that cicadas had emerged from the same places in 1956. They have come out in record numbers for an off-year, but in much smaller numbers than in a normal cicada year. The assumption is that only a part of the underground population has made a four-year mistake. We will test this by complete nymph skin counts in certain defined areas this year and we will return each year through 1973 to find out what percentage of the underground population was affected this year.

What is the significance of this premature emergence? The fact that different broods of 17-year cicadas are out of phase with one another in different geographical areas suggests that similar events have happened in the past giving rise to new broods which would continue to emerge on 17-year cycles, but different from those of the parent broods. Then, of course, the life-cycles of southern 13-year cicadas and northern 17-year cicadas also differ. In our thinking about the possible evolutionary paths of these insects, Dr. Lloyd and I postulated that it was more likely that some environmental factor (like a period of extreme weather, for instance) affected the development of cicada nymphs by four years, than by some other interval. We were only making an educated guess, however, and never

really expected to have a ringside seat at such a phenomenom, if, indeed, that is what happened in June.

Were there special factors operating on this last cicada cycle to make so many cicadas take a 13-year track instead of the normal one of 17 years? We don't know yet and perhaps we never will. However, we plan to compare general weather conditions since 1956 carefully with those of the 17 years prior to 1956 to see if there has been some conspicuous change. There is also a high concentration of reports from the residential suburbs ringing the city. This may be evidence of an important effect of the large metropolitan area on the local climate. Perhaps it is the effect of human disturbance (herbicides, pesticides, fertilizers). Perhaps the concentration of reports merely reflects the high density of residents and gardeners in the suburbs. Many possibilities like these will have to be tested against our field data.

Can a premature emergence in numbers like these give rise to an incipient new brood—one that is out of phase with the parent brood and on its own schedule of emergence? We don't know. However, the June weather was not suitable for cicadas, which need sunshine and warm weather to form singing choruses and to reproduce. No choruses were reported and it is probably safe to say that no effective reproduction occurred and no new incipient brood was established.

Reports on the emergence of 17-year cicadas came from the following Illinois communities:

Addison
Argo
Bellwood
Berkeley
Berwyn
Black Hawk Heights
Broadview
Brookfield
Calumet City
Clarendon Hills
Chicago Heights
Crete
Chicago
Deerfield
Des Plaines
Downers Grove
East Hazelcrest
Elk Grove
Elmhurst
Elmwood Park
Evanston
Evergreen Park
Flossmoor
Glencoe
Glen Ellyn
Glenview
Glenwood
Harwood Heights
Hazelcrest
Highland Park
Highwood
Hinsdale
Hometown
Homewood
Justice
La Grange
La Grange Park
Lake Forest
Lemont
Lincolnshire
Lisle
Lombard
Lyons
Merrionette Park
Midlathian
Morton Arboretum (North of Lisle)
Morton Grove
Mount Prospect
Norridge
Northbrook
Northfield
North Riverside
Oak Forest
Oak Lawn
Oak Park
Orland Park
Ottawa
Palatine
Palos Heights
Palos Hills
Palos Park
Park Forest
Park Ridge
Riverdale
River Forest
River Grove
Riverside
Riverwoods
Skokie
Steger
Stone Park
Tinley Park
Villa Park
Westchester
Western Springs
Wheeling
Willow Springs
Wilmette
Winnetka
Wood Dale
Worth

CALENDAR OF EVENTS

August hours: 9 a.m. to 6 p.m., Monday, Tuesday and Thursday; 9 a.m. to 8 p.m., Wednesday, Friday, Saturday and Sunday.

Through August 29 GUIDED PUBLIC TOURS Professional staff lecturers will provide free guided tours to visitors at 2 p.m., daily, Monday through Friday. A movie, "Through These Doors," which shows glimpses of behind-the-scenes activity at the Museum, will be shown at 3 p.m. in the Lecture Hall. Tours begin from the north entrance of Stanley Field Hall.

Through October 12 THE ART AND LIFE OF THE CUNA INDIANS Temporary exhibit explores the history and culture of this people who live on islands of the San Blas Archipelago off the coast of Panama. Although some aspects of modern civilization are now part of their lives, they have successfully maintained many of the customs and attitudes which are specifically their own. Hall 9 Gallery.

Through November 16 75th ANNIVERSARY EXHIBIT: "A SENSE OF WONDER, A SENSE OF HISTORY, A SENSE OF DISCOVERY" The free exhibit emphasizes the scope of the Museum's activities since its founding in 1893, following the World's Columbian Exposition. Choice specimens from the Museum collections and examples of current research programs by Museum curators are included in the exhibit. Hall 3.

Through August Summer Journey "INSECTS" The fascinating world of insects, which has the largest number of species in the animal kingdom, is the subject of the Raymond Foundation's current Journey for boys and girls. The free do-it-yourself tour program is open to any child who can read and write. Journey sheets and additional information are available at Museum entrances.

Would You Like To Help

Field Museum Membership continues to increase. It is up 73 per cent in the last three years and is now 16,500. More people need the Museum. We need more Members.

We are looking for women to interview prospective Members, telephoning three to five hours daily, four or five days a week. Salaried. Please call Mrs. Roder, 922–2410.

FIELD MUSEUM
OF NATURAL HISTORY
ROOSEVELT ROAD AT LAKE SHORE DRIVE
CHICAGO, ILLINOIS 60605 A.C. 312, 922-9410
FOUNDED BY MARSHALL FIELD, 1893
E. Leland Webber, Director
BULLETIN
Edward G. Nash, Managing Editor

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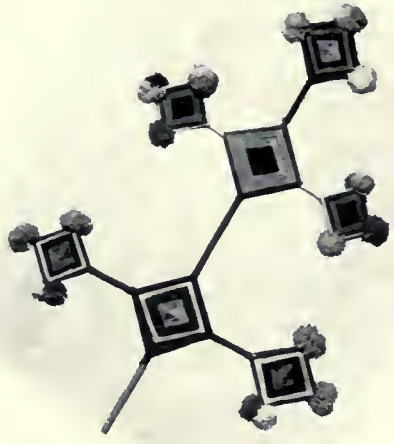
BULLETIN **FIELD MUSEUM OF NATURAL HISTORY**

Volume 40, Number 9 September 1969

Religious wood carving is one of the most prevalent art forms in Mexico. The subject matter was introduced by the Spaniards in the early 1500s' but the carving is done in a local folk style. The angel on this month's Cover has a remarkably realistic, human look. It is among a collection of pieces of pre-hispanic, Colonial and contemporary Mexican art depicting aspects of Mexican culture at the Fiesta Mexicana.

Fiesta Mexicana:



Popularly termed an "eye of God," this device of yarn and wood was used by Huichol Indians in their shrines to ward off evil. This art form predates the Colonial period and is indigenous to the Indian culture.

The arts of the Mexican people are numerous and richly varied, expressing a cultural heritage that has drawn upon the brilliant prehispanic civilizations of the Toltecs, Maya and Aztec Indians and the colorful and deeply religious Spanish influences of the Colonial period. The era of increasing technology and modernization is adding still another thread to the complex fabric of Mexican culture. Because they embrace aspects of the several distinct influences of the past, intermingled with regional characteristics, the art forms of contemporary Mexico are an appropriate medium for understanding the culture of the Mexican people, who form an important group in Chicago. There are 90,000 Mexican-Americans in the city itself and a total of about 120,000 in the greater Chicago area.

In bringing Fiesta Mexicana to the public, Field Museum is striving to increase the understanding of contemporary Mexican culture by non-Mexicans and to draw the local Mexican community into a wider participation in the cultural life of Chicago. To provide the most vital expression of Mexican culture today, artifacts and static displays will be presented as a complement to live demonstrations, where Mexican artisans will offer the public an opportunity to see how various objects are made. Selections incorporating both the Indian and Spanish backgrounds of Mexican culture will be performed by dancers and musicians throughout the Fiesta.

As visitors learn about the Mexican art of today from the practicing artisans, the static displays will provide an insight into the ancient and recent indigenous art forms from which the contemporary art forms derived. Exhibits on Colonial and prehispanic art will be on loan and the Museum's outstanding permanent exhibits on prehispanic and recent Indian cultures will also be utilized in the Fiesta. An interesting display of 75 folk and indigenous costumes, organized by the National Museum of Anthropology of Mexico, illustrates Mexican Indian dress appropriate for a variety of age groups and occasions—childhood, youth, marriage, religious observances and social occasions. The costumes, too, are a means of studying the influences of past cultural periods upon the contemporary Mexican scene.

Briefly, the art forms of the Mexican peoples—including pottery, weaving, wood carving, sculpture, jewelry and metalwork—originally worked with designs and methods restricted to a tribal or geographical group. Later, the great prehispanic Indian civilizations of Mexico spread their influence throughout the area that would become Mexico and their art forms, with their vigorous designs, imaginative mythological representations and lavish ornamentation left a lasting impression on the art of the country. Even today, centuries after the Mayan and Aztec cultures declined, artists copy or rework many of these ancient designs often adapting them to new artistic media or uses.

Elaborately decorated papier-mache skull is a contemporary piece, used in the religious observance of "The Day of the Dead," also called All Souls' Day.

An Indian woman of Huatla, Mexico, weaves cloth on a backstrap loom. (Photo courtesy of Dr. Daniel Rubin de la Borbolla.)

A Chiapas, Mexico, Indian weaves a long belt or sash, a piece of clothing which has been indigenous in Mexico for centuries. Patterns and designs may be determined by tribal or regional custom and are often based on ancient motifs. (Photo courtesy of Dr. Daniel Rubin de la Borbolla.)

The Spanish Conquest of the new world brought with it art forms then prevalent in Spain. It also brought Christianity. The religious art of the early 16th century, then, played a vital part in the development of art among the peoples of Mexico. Carvings and paintings and ceramics with religious themes or motifs remain popular with Mexican craftsmen. Sometimes the two influences are combined within the designs of individual objects.

The Mexican-American of Chicago has many new influences to deal with, those tied up in the sophisticated, technologically-oriented urban scene. They are usually very different from the influences which guided his life in Mexico and they have presented him with many problems and many challenges. Photographer Orlando Cabanban spent many weeks in the Mexican-American communities photographing the events in their everyday lives. A photo essay composed of these pictures will be exhibited at the Fiesta. In combination with the prehispanic artifacts, the Colonial art exhibit, the demonstrations by contemporary Mexican craftsmen, and the music and dance presentations, the Fiesta will provide a panorama of the major elements of contemporary Mexican culture in a capsule form.

All labeling on exhibits will be bi-lingual, in English and Spanish. The Mexican Chamber of Commerce and Industry, the Consulate General of Mexico, and the Mexican Tourism Department in Chicago are working closely with the Museum in organizing the Fiesta. Financial support for the Fiesta has been given by the Illinois Arts Council, a state agency; the Robert McCormick Charitable Trust, the Bertha LeBus Charitable Trust, Mexicana Airlines, and the National Endowment for the Humanities.

An Impressive Past A Vigorous Present

Art and Culture in Mexico

Aztec Calendar stone, from Mexico, circa 1480–1490 A.D.

Members' Fiesta

September 12: An exciting advance preview of Fiesta Mexicana will be held for Museum Members and their families from 6 to 10 p.m. The "Members' Fiesta" will feature singing and dance entertainment at 7, 8, and 9 p.m. in Stanley Field Hall, demonstrations of Mexican crafts such as weaving and pinata- and flower-making, and a motion picture. A photo essay "Mexicans of Chicago—1969," by Orlando Cabanban, will be on display as will a special exhibit of pre-Hispanic, Colonial and Contemporary Mexican folk art. A "Mexican marketplace" will offer high quality Mexican art and handicrafts for sale. Light refreshments in the Mexican mood will be served.

"El Grito" Celebration

September 15: "El Grito," a celebration in observance of Mexican independence will be sponsored by the Mexican community of Chicago from 8 to 11:30 p.m. in the Grant Park Bandshell. Fiesta Mexicana will have special hours that day, from 9 a.m. to 8 p.m., with live entertainment and craft demonstrations in Stanley Field Hall at 7 p.m.

Illustrated Lecture Series

OUTSTANDING experts in Mexican history and culture will bring their own special interests vividly alive in a series of illustrated lectures on consecutive Sunday afternoons, from September 14 through October 5, during Field Museum's Fiesta Mexicana. The lectures, complemented with color slides, will be held at 3 p.m. in the James Simpson Theatre, free of charge. They offer an excellent opportunity to learn about the exciting arts and complex cultural background of the Mexican people from internationally-known authorities.

September 14: Dr. Merle G. Wachter is an art historian and chairman of the Art Department of the University of the Americas in Mexico. In surveying the "Mexican Arts of the Colonial Period," Dr. Wachter will explain the blending of Indian and Spanish influences that give rise to modern Mexican culture, a blending that is clearly seen in Colonial church art and popular arts.

September 21: Mr. Norman F. Carver is an architect and photographer whose interest in the ancient architecture of Mexico has led to his becoming an expert in the subject. He will bring his informative study, "Silent Cities: Precolumbian Architecture," to the Museum for an encore during the Fiesta.

September 28: Dr. Daniel Rubin de la Borbolla is an eminent Mexican anthropologist. A former director of the National Museum of Anthropology and the National Museum of Popular Arts and Industries, he is well qualified to offer an insight into "The Art of a People: Contemporary Mexican Folk Arts," which focuses on the richness and diversity of Mexican popular arts.

October 5: Carlos R. Margain, an archaeologist and Secretario Tecnica of the National Museum of Anthropology in Mexico, traces the meanings and the specific techniques found in contemporary folk arts back to the Prehistoric cultures. "The Precolumbian Past of Modern Mexican Culture" explores the way in which elements of arts and indigenous ways of life have survived through adaptability during a series of Precolumbian conquests.

Fall Journey

Mexico

Busy Aztec market scene at Tlatelalco, about 1515 A.D. Detail from a diorama in Hall 8

CHILDREN will "visit" Mexico in the Fall Journey which begins this month and lasts through November. The Journey will include a glimpse of a Mexican market before the time of Columbus and information on the ancient civilizations that flourished there, as well as introducing youngsters to the toys, clothes, and everyday life of Mexicans today. The exhibits are primarily in Hall 8.

Mexico is Journey No. 59 in the Raymond Foundation's program instituted in 1955 to help children discover objects of interest in the Museum on selective do-it-yourself tours. An award program recognizes the children's accomplishments in the Journey program. Upon successful completion of four Journeys, a child receives a Traveler's Award. When eight Journeys are completed, he gets an Adventurer's Award, and when he completes 12, he earns an Explorer's Award. Four different Journeys are presented each year.

Each spring, a Traveler's Day is held at the Museum to present awards and in 1969, 208 boys and girls were presented with different awards in recognition of their participation in the program.

Upon completion of 16 Journeys, which takes four years, a child becomes a Beagler and is presented with a copy of Charles Darwin's *Voyage of the Beagle*. A special Journey takes him through Museum halls to see some of the specimens that Darwin saw on his historic journey. Upon completion of this, the child becomes a member of the Museum's Discoverers' Club, which now has a membership of 170. The Discoverers' Club meets once a year in the Museum, where staff members present special programs, which sometimes include glimpses of Museum activities behind the scenes in the scientific departments.

Journey sheets and information on the free program may be obtained at Museum entrances.

Museum Hosts First Convention of North American Paleontologists

The North American Paleontological Convention on September 5, 6, and 7 is an unusual event, marking the first combined meeting of five organizations of scientists who specialize in the study of fossils. Previously, the members of these bodies met separately, rarely exchanging research data and ideas with those in other paleontological disciplines. Announcements of the Chicago meeting attracted worldwide interest within the scientific community. Even though most of the participants are from North America, visiting scientists from Canada, Czechoslovakia, Denmark, England, Japan, Mexico, New Zealand, Sweden and West Germany plan to attend.

Convention organizers, headed by Dr. Rainer Zangerl, Convention President and Field Museum Chief Curator of Geology, have developed 14 technical sessions to cover many phases of paleontology, facilitating the flow of information among scientists from universities, museums, oil companies, geological surveys and oceanographic institutions. The 81 papers to be presented range from the chemical composition of fossils and the evolution of microorganisms to the impact of computers on the concepts and research in paleontology and how the specialty ought to be taught in universities.

Five geological field trips in widely scattered states will precede the Convention and local field trips to the Thornton Quarry and Peabody Coal Company (Pit 11) are planned for early arrivals to the meeting. The technical sessions will be held at the Museum, as will the Convention banquet. The keynote speaker will be Dr. Philip H. Abelson of Carnegie Institution, whose subject is "The Evolution of Proteins." There will also be several informal sessions and social events.

A special exhibit of fossils collected and donated to the Museum by amateur collectors will be on display in the lobby of the James Simpson Theatre during the Convention. Unusual specimens on loan from private collections will also be shown.

The Convention is sponsored by the Paleontological Society, the Society of Economic Paleontologists and Mineralogists, the Society of Vertebrate Paleontologists, the American Association of Stratigraphic Palynologists, the Paleobotanical Section of the Botanical Society of America and Field Museum. The importance of the conference is evidenced by a $25,000 grant to the Convention by the National Science Foundation towards the publication of all papers given at the meeting. The grant has been accepted by Field Museum, as host institution. Publication of the proceedings will be undertaken by Allen Publishing Company of Lawrence, Kansas.

Ptom-, Diken- and *Ariaspis*?

BY PATRICIA M. WILLIAMS
FIELD MUSEUM PRESS

Dr. Denison studies some of the fossil fish specimens in the Museum's impressive collection.

At one time or another most of us have wondered what the world will be like in the 21st century. Some men translate their musings into movies, like *2001: A Space Odyssey*; others advance their controversial predictions phrased in peak-load words like "magnetoplasmadynamics," "hypnopaedia," and "mariculture."* All of this prophesying is good fun, of course, and is made even more so by the fact that no one can prove it's wrong—yet.

But suppose we turn back in time—not a mere hundred or thousand years, but millions—past cavemen, past the first flowering plants and first birds, even beyond the dinosaurs to a time earlier than that of trees and reptiles. We are in the beginning of the Ordovician period 500 million years ago. What was the world like then? Who or what, if anything, lived here then and what were they doing?

Well, the world was, naturally, physically a very different place. At the beginning of the Paleozoic in the United States there were no Appalachian Mountains, no Rocky Mountains, no coastal ranges on the west. Then, the spread of the Ordovician seas resulted in what was the greatest flooding of the North American continent during all of Paleozoic time and at least half of the continent was submerged beneath the warm water before it was over. The first and very primitive land plants grew during the Silurian period (430–400 million years ago) and it was during this time that they became sufficiently abundant in fresh water and on land to offer a stable food source for animals. The Devonian period (400–350 million years ago) is commonly referred to as "the Age of Fishes," because, for the first time in the history of the earth, a group of vertebrate animals, the fishes, occupied a prominent part of the organic world. The Devonian fishes were not like anything today's angler might reel in. For example, some had vacuum-cleaner-like mouths instead of movable jaws. Many of these jawless fishes had no scales, but were covered with bony plates.

* Magnetoplasmadynamics: the science of putting the fourth state of matter—electrified gas—to work.

Hypnopaedia: sleep teaching.

Mariculture: cultivation of the seas of the earth.

Dr. Robert H. Denison, the Museum's highly respected Curator of Fossil Fishes, has centered his research on the Ordovician, Silurian and, especially, the Devonian periods. He has provided new information and added immensely to the knowledge of this very critical area in time—the very base of vertebrate life on earth. In "A Review of the Habitat of the Earliest Vertebrates" (*Fieldiana:* Geology, Vol. 11, no. 8, 1956), which is usually mentioned as his most significant work, Dr. Denison took issue with the classic view that early vertebrates were fresh water forms, some of which later migrated into the seas. He presented a thorough and careful review of all data on the occurrences, habitat and adaptation of the early vertebrates and concluded that "vertebrates originated in the sea and did not begin to enter fresh waters until some time in the Silurian." This publication reached and affected the thinking of a great many people and since Denison offered this independent conclusion, he has been joined in it by most American paleontologists.

Dr. David Bardack, Associate Professor, University of Illinois, Chicago Circle, and Museum Research Associate, cited Denison's "The Soft Anatomy of Bothriolepis" (Journal of Paleontology, 1941) as another important publication. The form of some of the internal organs of Bothriolepis, an armored fish from the Upper Devonian of Scaumenac Bay, Quebec, was preserved because, apparently, the fish swallowed extremely muddy water. The muddy water clogged up the respiratory apparatus and the fish died. The muddy water then filtered into those internal organs which opened into the exterior and, finally, the mud-filled fish was buried with coarser sand. Dr. Denison's examination of the preserved forms of these organs indicated several things, including the fact that the alimentary system was a primitive, straight, uncoiled tube without an expanded stomach region, but was specialized in having a complex spiral valve. Based on this investigation, Denison also offered the earliest evidence of lungs in vertebrates.

In "New Silurian Heterostraci from Southeastern Yukon" (*Fieldiana:* Geology, 1963) Dr. Denison made a unique contribution to paleontology by introducing three new genera, the Tom, Dick and Harry of the Silurian age—Ptomaspis, Dikenaspis and, with a cockney touch, Ariaspis.

Like the theories made about the future, Denison's paleontological statements are also phrased in exotic and strange-sounding words, but there the similarity abruptly and firmly ends. Denison's conclusions are not the product of idle day-dreams or wishful thinking, but are founded on expert interpretation of tangible evidence as well as years of training, research and hard work. Although it might be tempting and certainly understandable to speculate about the goings-on in the far distant past, Denison never does. He has published a great deal and all of his work has been described by his fellow paleontologists as "absolutely reliable," "thorough and sound," "accurate," "original" and—perhaps surprisingly—"imaginative." As Dr. Everett Olson, Professor of Vertebrate Paleontology, University of California and Museum Research Associate, says, Dr. Denison is a very methodical and orderly worker and, yet, "at the same time he has the ability to see past the mundane details to the greater possibilities as well as descriptive"—a combination not found in all paleontologists' work.

Denison is descriptive and theoretical about fossils. As Hugh Miller, an early expert in the Devonian, once said, "This interest in a science such as geology must consist in the ability of making dead deposits represent living scenes."

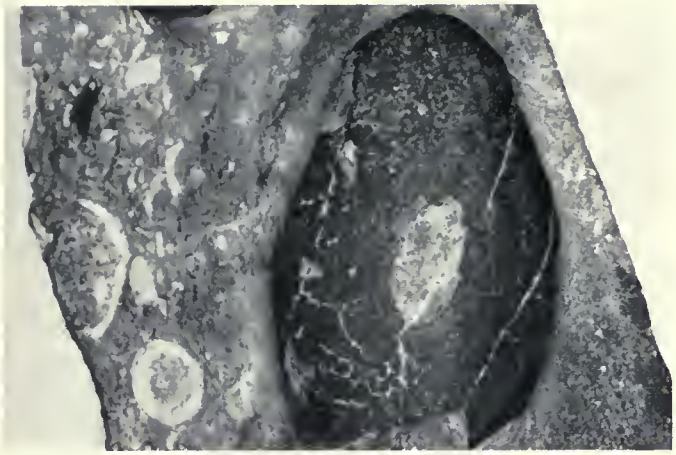
Dorsal shield of Ptomaspis canadensis, *shown X2, one of the three new genera of Silurian fossil fishes described by Dr. Denison in 1963.*

Obviously, then, the first thing the paleontologist must do is get hold of some "dead deposits."

To do this, Dr. Denison has gone on a number of field trips, including the famous Wendell Phillips University of California African expedition in 1947. Since joining the Museum staff in 1948, Dr. Denison has made many trips to the early vertebrate localities in North America and, as a Guggenheim fellow, he visited a large number of fossil localities in Norway, Sweden and Great Britain.

It was in Oslo in 1953 that Denison made a discovery that landed him on the cover of a Norwegian magazine. He had spent the entire day searching a well-known fossil site for new specimens and had found nothing. Giving up, he sat down on a rock to have a cigarette and wait for

a bus. As he smoked and waited, he looked down and there at his feet was a complete fossil of an eurypterid. (Eurypterids were scorpion-like creatures that inhabited the Silurian sea floor.) Denison took the eurypterid to the Paleontologisk Museum where Professor Heintz, the museum curator, and several of his students greeted it with great excitement and immediately piled into a bus and rushed back out to the site. Although they had visited and examined the area many times before, they found several new fossils that day.



Dikenaspis yukonensis (above) *and* Ariaspis ornata; *fossils of the dorsal shields of these fishes, shown X2. The new genera of fishes were discovered in the Yukon.*

While the Norwegian eurypterid remained in Norway, Dr. Denison has added enormously to the Museum's collections. Dr. Rainer Zangerl, Chief Curator of Geology and a renowned paleontologist himself, says that Dr. Denison has enlarged the Museum's collection of fossil fishes "from virtually zero to one of the best in the country." Dr. Zangerl went on to say that almost the entire collection of primitive vertebrates has been gathered by Dr. Denison.

Dr. Denison is now studying pteraspids from a Lower Devonian site in the Big Horn Mountains of Wyoming where he has collected with groups from the Museum for at least three summers. While he is primarily working on the systematic relationships among the pteraspids, Dr. Denison is also interested in the growth of these creatures. Until now, no one has ever had any very young pteraspids to study and some workers assumed that the creature's shell was not formed until the pteraspid was an adult. However, Dr. Denison has now examined very young pteraspids and has determined that they possess a thin layer of dentine and that, later, bone forms below this dentine layer to create the shell.

Histology—a study of tissues—is particularly effective with the small fossil bits that Dr. Denison often has to work with and he is among the first American paleontologists to extensively apply the techniques of palco-histology to his work. These techniques provide a way of analyzing paleontological material to determine ontogenetic and phylogenetic relationships. That is, both the relationships within an individual's life development and the development or evolution of a whole group. As Dr. Denison's work is so closely concerned with the evolutionary relationships among fish—who descended from whom? what evolved independently? did vertebrates evolve in the fresh water or the sea? —it is obvious why these techniques would be of use to him. With his characteristic modesty and reticence, Denison denies being an expert in histology, saying, "I've never even taken a course in it." How could he? The *only* course in paleohistology in North America is offered at the University of Chicago by Dr. Zangerl—and Dr. Denison.

As a child in Massachusetts, Denison did not dream and plan for the day when he would be acclaimed an expert in fossil fish—in fact, he got into that area of research by accident. He wrote his doctoral thesis at Columbia on fossil mammals and planned to concentrate his career on them. However, jobs were still scarce in 1937 and he accepted a position as Assistant Curator of the Museum at Dartmouth College where they had no collection of fossil mammals. They did, though, have a collection of early vertebrates and Denison began work on them.

Today Dr. Denison is one of three men in the United States working on vertebrate life of the early Paleozoic. There are paleontologists in Europe, most notably Scandinavia and Great Britain, working in this area as well. Without qualification, Denison's colleagues rank him as "one of the best," "a world expert," and "top ranking." Dr. Denison was invited to present a paper at the Fourth Nobel Symposium in Stockholm and the number of other scientists at the symposium who referred to Dr. Denison's work is most impressive. Denison is most often characterized as a typical New Englander because of his subtle wit, reserved manner and reluctance to admit to his many achievements. Dr. Bardack expressed the sentiments of many people when he said, "He's a great guy. I think a lot of him as a paleontologist and a human being."

Julian B. Wilkins Elected to Museum Board of Trustees

The election of Chicago lawyer Julian B. Wilkins as a Trustee of Field Museum of Natural History has been announced by Remick McDowell, President of the Board of Trustees.

A member of the firm of Wilkins, Wilkins & Wilkins, he is secretary and director of Law in American Society Foundation and a former member of the board of managers of the Chicago Bar Association. He is also organizer, general counsel and director of the Seaway National Bank of Chicago. In addition to his interest in Field Museum, Mr. Wilkins serves as a board member of Children's Memorial Hospital and Chicago Child Care Society.

Mr. Wilkins is a graduate of Harvard Law School and also holds a bachelor of arts degree from the University of Wisconsin. He and his family reside at 5640 South Harper in Chicago. Mrs. Wilkins is a charter member of Field Museum's Women's Board.

Julian B. Wilkins

Donald A. Edinger

Donald Edinger Named Chief of New Education Department

Donald Edinger has assumed the duties of a new position at Field Museum, that of Chairman, Department of Education. The new department will include Raymond Foundation, Harris Extension and other public programs, although each of these programs will retain its individual identity and functions within the department. As the new department develops, all educational programs below the graduate level will fall within its scope.

As a recent science teacher, science consultant and science supervisor in the Kern County, California, school system, and co-author of a high school biology curriculum, "Biology, A Process Approach," Mr. Edinger brings both professional scientific and educational experience to his new position. He holds M.S. and M.Ed. degrees and for the past five years has been engaged in graduate work in botany at the University of Arizona.

Area Geology Field Trip Series Set for October

THREE all-day Saturday field trips will be conducted to local areas of geologic interest this fall by Dr. Matthew H. Nitecki, Assistant Curator of Fossil Invertebrates. The first excursion will be to Palos Park to observe the results of glaciation; the second, to the Wilmington district to examine the ancient swamps that produced deposits of commercial coal, and to Kentland, Indiana, to explore a supposed ancient meteorite crater; and the third trip will be to the Starved Rock area to study the effects of deforming forces on the layered sedimentary rocks. There will be many opportunities to collect and identify rocks and fossils.

These field trips are offered jointly by Field Museum, Department of Education, and the University of Chicago, Downtown Center. The introductory lecture will be held in the University of Chicago, 65 E. South Water Street, on Saturday, October 4, at 10 a.m. The trips will be by chartered bus on successive Saturdays: October 11, 8 a.m. – 3 p.m., Palos Park; October 18, Wilmington and Kentland, 8 a.m. – 6 p.m.; and October 25, Starved Rock, 8 a.m. – 6 p.m. Further information is available from Mrs. Maria Matyas or Miss Barbara O'Connor, University of Chicago, 65 E. South Water Street, Chicago, FInancial 6–8300.

Students Active in Summer Education-Work Programs

TWENTY-FOUR college students worked in various summer programs at Field Museum this year, programs which enabled both graduate and undergraduate students to earn money and receive practical experience in the scientific fields of anthropology, botany, geology, paleontology and zoology.

Of these students, 10 were Shinner Scholars, who participated in a scholarship-work program organized by the Ernest G. Shinner Foundation of Chicago and the Museum. These students received a $300-a-month stipend and under the guidance of Museum staff members had an opportunity to apply laboratory and classroom techniques to practical problems related to their areas of academic concentration. Two additional students were admitted to summer training through programs established by the Bertha LeBus Charitable Fund and the Crowell Collier and MacMillan Foundations.

The remaining 12 students are active in a 10-week program, "New Perspectives in Archaeology," underway at Field Museum's field station in Vernon, Arizona. Supported by the National Science Foundation and supervised by Paul S. Martin, Field Museum's Chief Curator Emeritus, this program enables students to obtain experience in practical and theoretical archaeology during their undergraduate years. Each participant conducts an independent research project based on his work at the archaeological excavation and receives all living expenses and an allotment toward travel.

THE EDWARD FALL FILM-

In some parts of the world, ancient traditions flourish amidst rapid technological growth. In other places, wild creatures still follow the timeless patterns of their lives, relatively unhampered by civilization. The all too rapidly vanishing aspects of life in settings ranging from the Far East to Old Vienna have been recorded in exciting color films by well known lecturer-filmakers. They have thoroughly documented not only the paradoxes of changing ways of life for the human beings who live in these places, but for the wildlife of the areas as well. The nine films will be shown free on successive Saturdays from October 4 through November 29 at 2:30 p.m. in the James Simpson Theatre. Seats will be reserved for Members until 2:25 p.m. Attendance is limited to adults and children of Members.

Regent Day
Chickering – Porterfield
"Miniature Countries"

Backstreet
Green's "Hong Kong"

OCTOBER 4

HONG KONG *by Ray Green*

Resting uneasily at the border of Red China, Hong Kong is one of the world's most fascinating places. Some ancient Oriental traditions continue in contrast with the frantic pace of industry and commerce that characterizes Hong Kong. The color film reveals many facets of this exotic, bustling, and sometimes troubled crossroads of the Orient.

Surfing
Lark's "Hawaii"

OCTOBER 11

HAWAII *by Ed Lark*

Hawaii's colorful history, from the creation of the islands through its first settlement, the influences of missionaries, and its phenomenal growth as our 50th state, will be traced in this exciting film. Seldom-visited locations, unusual celebrations and sporting events, and wildlife are included along with views of Hawaii's well-known attractions.

OCTOBER 18

PAGEANT OF INDIA *by Gerald Hooper*

The sweep of India's breathtaking scenery and wildlife, its romantic landmarks, and the diverse customs of its many peoples are captured in brilliant color in this film. In India, 5,000 years of continuous civilization have left a legacy of architecture, art, folklore and traditional events which firmly co-exist with India's strivings toward modernization and technological growth.

OCTOBER 25

BRAZIL *by Clay Francisco*

Many energetic and talented people are shaping Brazil's promising future, expressed today in its ambitious capital Brasilia, and exciting cities of Rio de Janeiro and Sao Paulo. Yet, much magnificent and wild country lies inland. Strange animals and flora inhabit the rainforests near the Amazon. Indians, too, continue to live there as their ancestors did centuries ago. The color film contrasts many moods and facets of this giant of South America.

E. AYER LECTURE SERIES

NOVEMBER 1

LION PRIDE *by Cleveland and Ruth Grant*

A rare study of totally wild African lions reveals secrets of animal behavior in an intimate, sympathetic and understanding way. The Grants spent five months in Mozambique and Rhodesia filming three prides of lions in contiguous territories, showing the daily life and adventures of these beautiful "big cats" and other wild animals which share their range.

NOVEMBER 8

EUROPE'S MINIATURE COUNTRIES *by Lisa Chickering and Jeanne Porterfield*

Liechenstein—Andorra—SMOM—San Marino—Monaco: these miniature countries sandwiched in on the European continent preserve unique aspects of the cultures and histories of Switzerland, Spain, France and Italy. One country boasts castles and crowned heads, another has no army and no taxes and contains skyscrapers and herds of wild horses within its borders. These are but a few of the fascinating sights to be found in these tiny nations.

Amazon Traders
Francisco's "Brazil"

NOVEMBER 15

THAILAND *by Kenneth Armstrong*

The 30 million people of Thailand are the most prosperous and literate in Southeast Asia. With many natural resources and industrial growth, it would seem secure. Yet, it feels threatened by Red China. Mr. Armstrong, an experienced war correspondent, shows the temples, festivals, people and wildlife of Thailand against the background of quiet preparation for conflict, if the necessity arises.

NOVEMBER 22

PORTRAITS OF AUSTRIA *by Curtis Nagel and William Moore*

The "portraits" in the film range from Tyrolean Alpine villages, to the historic sites of Austria's military and musical past, to modern Vienna, where some of the grandeur of an earlier day is retained in such institutions as the world-famous Spanish Riding Academy with its exquisitely-trained white Lippizaner stallions.

Apache Dancer
Butler's "Southwest"

NOVEMBER 29

OUR GREAT SOUTHWEST *by Willis Butler*

An intensive study of Arizona and New Mexico, where all living things must adapt to the desert environment. The prehistoric residents of the area are studied through cliff dwellings. The Indians of today are on reservations, many living essentially as their tribes have for centuries. Metropolitan areas created by the power projects and irrigation are shown, as is the restored frontier town of Tombstone, and an exciting view of the Grand Canyon from a plane flight 3,000 feet down into the canyon.

CALENDAR OF EVENTS

September hours: The Museum will be open from 9 a.m. to 6 p.m. on Labor Day, September 1, and from 9 a.m. to 5 p.m. daily beginning September 2.

September 5-7 NORTH AMERICAN PALEONTOLOGICAL CONVENTION North American paleontologists and visiting foreign scientists representing many fields of interest will come together in one meeting for the first time.

September 12 "MEMBERS' FIESTA" provides Museum Members and their families with a preview of the Fiesta Mexicana from 6—10 p.m. Special entertainment, including a mariachi band, will be added to the regular features of the Fiesta. Performances in Stanley Field Hall will be at 7, 8, and 9 p.m.

September 13 FIESTA MEXICANA The Museum's salute to Chicago's Mexican community opens to the public with live folk dance and musical programs daily except Monday at 11 a.m., noon, and 3:30 p.m., 11 a.m., 1 p.m. and 3:30 p.m. on Saturday, and at 1 p.m. and 2:30 p.m. on Sunday, live demonstrations of arts and crafts from 9:30 a.m.—4:30 p.m., daily except Monday, and multi-screen slide projections. Films relating to Mexican history, art, culture and archaeology, will be shown daily. A series of lectures on consecutive Sundays beginning September 14 round out the program, which runs through October 5. A concurrent exhibit of pre-Hispanic, colonial and contemporary folk art, and a photo-essay on Chicago's Mexican population remain on display through November 9. See Pages 2–4.

September 14 Fiesta Mexicana Lectures—"MEXICAN ARTS OF THE COLONIAL PERIOD" opens the four-lecture series. Dr. Merle G. Wachter, Chairman, Art Department, University of the Americas in Mexico City, is the speaker. All lectures will be at 3 p.m. in the James Simpson Theatre and are free.

September 15 "EL GRITO" CELEBRATION, marking Mexican Independence, will be sponsored by the Mexican Community of Chicago from 8—11:30 p.m. in the Grant Park Bandshell. Fiesta Mexicana will be open from 9 a.m.—8 p.m. in connection with the occasion, featuring live entertainment and craft demonstrations in Stanley Field Hall at 7 p.m.

September 21 Fiesta Mexicana Lectures—"SILENT CITIES: PRECOLUMBIAN ARCHITECTURE" will be presented by Norman F. Carver, Jr., a practicing architect and author of a pictographic essay, *Mexico and the Maya*.

September 28 Fiesta Mexicana Lectures—"THE ART OF A PEOPLE: CONTEMPORARY MEXICAN FOLK ARTS," by Dr. Daniel Rubin de la Borbolla, a former director of the National Museum of Anthropology and the National Museum of Popular Arts and Industries in Mexico City.

October 4 Fall Lecture Series "HONG KONG" by Ray Green. A color film study of the bustling, crowded, exotic crossroads of the Orient. 2:30 p.m., James Simpson Theatre.

October 5 Fiesta Mexican Lectures—"THE PRECOLUMBIAN PAST OF MODERN MEXICAN CULTURE will be explored by Carlos R. Margain, Secretario Tecnica of the Museo Nacional de Antropologia in Mexico.

October 11 Fall Lecture Series "HAWAII" by Ed Lark. The history and development of the exciting islands are shown as well as contemporary views of our 50th state. 2:30 p.m., James Simpson Theatre.

Through October 12 ART AND LIFE OF THE CUNA INDIANS Temporary exhibit on the Indians of San Blas, Panama. The people are highly independent as a slide-show of their activities shows, yet they often express outside influences through their arts, with surprising and beautiful results. Hall 9 Gallery.

CORRECTION: CHILDRENS' WORKSHOPS

Please note: The workshops for November 1, *Bones to Bodies,* and for November 8, *Earth's Changing Crust,* are for children ages 10–13 years. It was incorrectly stated in the August Bulletin that these workshops were for ages 6–8.

CALENDAR (*continued*)

Through November 16 FIELD MUSEUM'S 75TH ANNIVERSARY EXHIBIT The three-part presentation—A SENSE OF WONDER, A SENSE OF HISTORY, A SENSE OF DISCOVERY—shows the scope of the Museum's activities since its founding after the World's Columbian Exposition in 1893. Many of the Museum's choicest specimens are part of the dramatic and unusual display. Hall 3.

Through November Fall Journey "MEXICO" The Museum's permanent Mexican collection (Hall 8) reveals the mighty civilizations of Pre-Columbian Mexico and the everyday life of Mexican peoples then and now. Any child who can read and write is welcome to take this free do-it-yourself tour sponsored by the Raymond Foundation. Free Journey sheets and information on the Journey program are available at Museum entrances.

MEETINGS:

CHICAGO SHELL CLUB,
September 14, 2 p.m.

NATURE CAMERA CLUB OF CHICAGO,
September 9, 7:45 p.m.

ILLINOIS ORCHID SOCIETY,
September 21, 2 p.m.

FIELD MUSEUM
OF NATURAL HISTORY
ROOSEVELT ROAD AT LAKE SHORE DRIVE
CHICAGO, ILLINOIS 60605 A.C. 312, 922-9410
FOUNDED BY MARSHALL FIELD, 1893
E. Leland Webber, Director
BULLETIN
Edward G. Nash, Managing Editor

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BULLETIN **FIELD MUSEUM OF NATURAL HISTORY**

Volume 40, Number 10, October 1969

The GARDENS of GREAT BRITAIN

Phil Clark, who wrote the accompanying article and took the photographs, will lead the tour, "Eden Revisited: A Tour of Britain and its Gardens." He spent two months this summer in Britain, selecting the best gardens and other points of interest. He is the former Editor of Horticulture *magazine, published in Boston, the former garden editor of* Living for Young Homemakers *magazine, was for almost 20 years garden editor of The News, Mexico DF, and is the author of the book published in Mexico, "A Flower Lovers' Guide to Mexico." He is Field Museum's Chief of Natural History Tours and its Public Relations Counsel.*

Photo, left: *The Lion of England, one of ten royal "Queen's Beasts," sculptured in Portland stone by James Woodford and presented by HRH Queen Elizabeth II to the Royal Botanic Garden at Kew in 1958.*

The contrasting beauty of two British gardens is shown on our October cover. Delightful, thoroughly English, informality dominates a tropical garden, above, on the Scilly Islands at Tresco Abbey. Here, tropical foliage is given English landscaping treatment uniting white flower balls of Ti Plant (Cordyline australis) *from New Zealand, palms* (Phoenix canariensis) *from the Canary Islands, and blue flower spikes of Pride of Madeira* (Eschium sp.). *Below, the Long Walk, a bit of equally English formality in the gardens of Hidcote Manor in Gloucestershire, employs closely manicured hedges of hornbeam* (Carpinus betulus) *with a Monterey Pine* (Pinus radiata) *at right.*

The visitor who looks beneath the surface finds a Britain beyond the cardboard unreality of the travel folders.

First, he encounters a whole mosaic of different regional accents, folkways and traditions—dramatic contrasts in attitudes and holdovers in mannerisms. Another side of the British reality few tourists see: the island nation's magnificent natural history, its forests and heaths, meadow flowers and the dwarfed vegetation of the mountainsides, the varied bird life and the European red deer which still run in herds on the great estates.

But best of all is the British "feel" for natural history—the way in which British garden estates and cottagers' floral borders blend the botany buff's zeal for plant collections and the landscaper's artistic sense of the improved natural; the avid fascination of most British for the country's birds and their love for domestic animals.

Everyone expects, of course, the medieval castles perched upon the bluffs, but many are surprised to discover the widespread archaeological remains—lonely cairns on Cornwall hilltops, mysterious stone circles in Derbyshire pastures, and bronze age standing stones in the Scottish highlands. The archaeology-oriented find their enthusiasm to be a British national passion.

For these reasons, Field Museum plans a natural history tour of England, Scotland and Wales—May 30 through July 4, 1970. The tour cost of $2,445 covers all expenses (except tips) and includes a $600 tax deductible donation to Field Museum. Tour membership will be limited to the first 25 persons to pay the $600 deposit. Botanical and horticultural specialists will accompany the group. The program, for 36 event-filled days, follows:

Saturday, May 30

Your British Overseas Airways flight, 567, leaves from Chicago's O'Hare Airport at 6:30 p.m.

Sunday, May 31

You arrive in London at 9 a.m. and settle in your room at the Hotel Grosvenor on Hyde Park. The day is free for you to rest and to become familiar with downtown London. Unless otherwise noted, all meals are at the tour hotels.

Monday, June 1

The Royal Botanic Garden at Kew, in Surrey, just south of London, is one of the world's most comprehensive botanical collections. Just now, it is ablaze with Rhododendron species and horticultural varieties. Iris and early peonies also provide dramatic dolor.

Tuesday, June 2

You'll make an early morning bird watch in Selsdon Wood Nature and Bird Preserve, near Croydon outside London. In the ferny shade of this forest of English oaks and European beeches, you get some idea of what the

primeval London area was like and may get some ideas about what we should do near our American urban centers. After lunch at the Grosvenor, you tour the British archaeological sections of the British Museum. Dinner is at Bentleys.

Wednesday, June 3

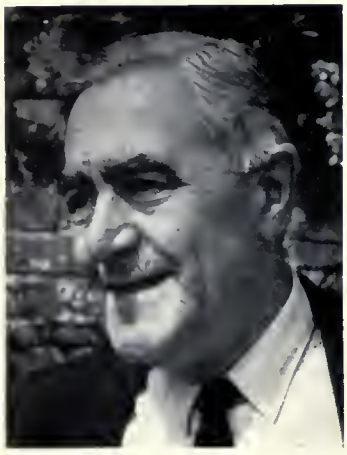
This morning you meet Roy Hay, the Garden Editor of the Times of London and one of England's most prominent horticulturists. He accompanies us to the Gardening Centre at Syon, where lupines make a sensationally colorful showing and where new horticultural varieties are grown. After lunch at the swank Planter's Grove, you visit Syon House, the residence of the Dukes of Northumberland. The house was begun in 1547, but the richly decorated interior was done in 1762.

Thursday, June 4

You see some of London's highlights—Westminster Abbey, Parliament and the Tower—during the morning. The afternoon is free, with dinner at Samuel Pepys' Restaurant overlooking the Thames.

Friday, June 5

The tour moves by motor coach to Canterbury where, during the morning, you view the great Cathedral. After lunch, you visit Sissinghurst Castle, in the Weald of Kent. Here is a garden creation of two gifted people, Vita Sackville-West and her husband, Harold Nicolson. Vita Sackville-West was one of England's great garden writers and poets. Her ancestors lived in the castle, and its 16th century twin-towers stand as a centerpiece of the garden. "Profusion, even extravagance and exuberance within the



Roy Hay, Garden Editor of the Times of London, will be one of the gardening experts to host Tour members.

confines of the utmost linear severity" was her landscaping aim, and this she achieved. Head Gardners Pamela Swerdt and Sibylle Kreutzberger, who worked with Vita Sackville-West, show us around. After dinner at our hotel, the Old Fellbridge in East Grimstead, you hear a talk "American Plants in English Gardens," by England's outstanding nurseryman and plant breeder, Will Ingwersen.

Saturday, June 6

You visit Ingwersen's Nursery, famous for its rock plants, then spend the afternoon in Nymans gardens, residence of the Earl and Countess of Rosse, in Sussex. It is a garden which blends imperceptibly from wild to informal to formal and back again. Great cedars of Lebanon spread their shaggy, light green branches over vast Victorian lawns, a long pergola of wisteria makes a fragrant walk to a Japanese garden, English style, and a wilderness of pines, spruces, chamaecyparises, arborvitaes, firs and other evergreens from throughout the world is reached through a long avenue of old English limes. Will Ingwersen accompanies us, to give his expert insight. After dinner at out hotel, the Hog's Back, in Seale in Surrey, we hear a talk by Mr. Hay, "A Chat About England and English Gardeners and Their Funny Little Ways."

Sunday, June 7

Most of the group attends Anglican services at the Losely Church in Seale—where crusaders' marks may be

Mystic Lanyon Quoit, a 2000 B.C. galley grave on a heather-covered Cornish hill is an important, but seldom-visited British archaeological site.

seen on the walls. You spend the afternoon as a guest of Roy Hay at his 16th Century house and in his interesting experimental gardens. Dinner is at the Hog's Back.

Monday, June 8

Frances Perry, author of numerous gardening books, joins the tour today and stays with us through Wednesday. On the way to Shakespeare Country, you pause at Oxford to see the grounds of the Waterperry Horticultural School and of the Oxford Botanical Garden, Britain's oldest botanical garden, founded in 1620. Dinner is at your hotel in Stratford-on-Avon, Alveston Manor. After dinner, Mrs. Perry shows slides of Galapagos birds.

Tuesday, June 9

Today's feature is Hidcote Manor gardens—a series of gardens separated by hedges, mostly in modified informal style with massed plants of a single kind as though wild. Some gardens emphasize a single color or color combination, as blue Meconopsis poppies with yellow Primulas. The Manor is located in the hilly Cotswold area, where you see many traditional houses with dark paneling on light facing and often with hay thatch roofs. After dinner, you

attend a play at the Royal Shakespeare Theatre.

Wednesday, June 10

You visit the principal Shakespeare locations—Shakespeare's birthplace, the Anne Hathaway Cottage with its lovely cottage style garden, Halls' Croft with an outstanding herb garden, and New Place with an Elizabethan knot garden.

Thursday, June 11

Today's highlight is that magic circle of giant stones—Stonehenge. Now believed by archaeologists to date from between 3,000 and 2,450 B.C., the method of transporting the huge stones from Wales to Wiltshire and of topping groups of two stone slabs with a third, remain a mystery. Dinner is at our hotel, the White Hart, in Salisbury.

Friday, June 12

Salisbury Cathedral leaves you in astonishment as great as did Stonehenge: this time for the architectural, engineering and artistic accomplishment of 13th Century Englishmen. You visit the nearby garden of Mr. and Mrs. H. F. W. Cory, who have you for tea in their garden, which includes some rare English wildflowers among the perennial border plants. You find Stonehenge relics and the Bustard diorama, showing an extinct British turkey-like bird, at Salisbury Museum. Dinner is at the Red Lion.

Saturday, June 13

Today you see the epitome of the English "Paradise Garden," which makes a British garden tour "Eden Revisited": Stourhead. Over 2,500 acres in extent, the great garden includes artificial lakes, falls developed in existing streams and masterully contrived garden pictures, such as the Doric style Temple of Flora on a lake. Carefully blended colors—coppers, golds, and greens of trees, the brilliant variety of Rhododendron blooms and the giant trees collected from all over the temperate world are remarkable. This great garden was largely inspired by the admiration for Italian romantic landscape painting by Sir Henry Hoare the Younger, who inherited the estate in 1741. After lunch at the Spread Eagle, you visit the Georgian style Stourhead's Palladian Revival house.

Sunday, June 14

Before services at Salisbury Cathedral, you go on a bird and wild flower walk in Blackmoor Copse, maintained mainly as a butterfly refuge by the Wiltshire Trust for Nature Conservation. The tour is accompanied by a local bird watcher, Mr. H. F. W. Cory. Dinner is at the Haunch of Venison, a small jewel of architectural evolution which began evolving in 1320.

Monday, June 15

Today's trip is through scenic rural Dorsetshire and Devonshire into Cornwall and finally to Penzance, where you dine at your hotel, the Queen's.

Tuesday, June 16

During the morning you tour St. Michael's Mount, a 14th Century castle on a rocky hill in the sea. You picnic in the lonely Cornish hills with their cover of heather, near the 2,000 B.C. galley grave of Lanyon Quoit. That afternoon at Trengwainton Estate, Lady Bolitho shows the tour some of the botanical highlights of her gardens, famous for their Rhododendron species, Magnolia collections and warm temperature plants like Australian tree ferns. You visit the remains of an iron age settlement at Carn Euny and return to Penzance with stops to see San Creed Church and the fishing boats at Newyn Harbour.

Wednesday, June 17

Today you see a Britain you never dreamed existed: a tropical England! After a 28-mile helicopter ride you reach St. Mary's Isle and from there boat to Tresco Isle, another island of the Scilly group. At Tresco Abbey, you find Mexican, African and South Pacific plants flourishing in the planned informality of an English garden.

Thursday, June 18

This morning you go bird watching in a boat, near the Isle of Annet, where puffins, cormorants, guillemots, razorbills, oyster catchers and many kinds of gulls may be seen. David Hunt, of the Royal Society for the Protection of Birds, accompanies the bird watch.

Friday, June 19

You travel to Llandudno, in northern Wales, dining at your tour hotel, the Imperial.

Formal parterre garden of Drummond Castle in Scotland is made up of clipped box, yew, Japanese maples, purple and light lavendar violas and foliage plants.

Saturday, June 20

Today you visit Wales' leading example of the paradise garden, Bodnant at Tal-y-Cafn—a series of gardens which are a related chain moving from English informal to wilderness to English semi-formal to English paradise or picture garden. Vistas throughout the 75 acres of gardens are carefully planned for their focal points and display of plants of unusual beauty, size and rarity. Highlights: the Laburnum arch, almost 100 years old; many Rhododendron hybrids developed at Bodnant; the waterlily ponds, the exquisite rose garden among towering *Chamaecyparis lawsoniana* var. *erecta virides* nearly 100 years old, and

deciduous forests along the Hiraethlyn River, which contain interplantings of elegant flowers. The turreted, ivy-suited graystone castle, built in 1749, stands on great sweeping lawns interrupted by huge English oaks. Tour is guided by Head Gardener Charles Puddle. Returning to Llandudno, you tour Conway Castle, a fortress built in 1283.

Sunday, June 21

Magnificant Welsh scenery unfolds as you travel

Dawyck in southern Scotland has been a center of arborculture for 300 years. Its wilderness gardens include a fir planted in 1680 and a larch planted by Linneaus in 1725.

through hills which rise sharply and finally reach the pine-fir-larch forests of the valley of Betwys y Coed. The tour pauses to inspect Capel Garmon in Derbyshire, a Stone Age rock-lined passage among the ferns and hillside grasses. Other points of scenic interest are Swallow Falls rushing through a rocky channel down the forested hillsides, Snowdonia Mountain and Caernavon Castle, the 13th Century castle where the Prince of Wales was invested. Lunch is at the Royal Victoria at Llanberis.

Monday, June 22

The trip from Llandudno through Cheshire to the Peak District is through gentle hills and oak-beech forests. You lunch at your hotel, the Palace in Buxton. The afternoon includes visits to Bakewell Church, where some tombstones carry Viking inscriptions from the pre-Christian era, to the Medieval House Museum and Haddon Hall, residence of the Dukes of Rutland, to see a medieval manorial home and its terraced gardens of wall and bed roses.

Tuesday, June 23

You picnic near the site of one of the most important and least-visited archeological sites in Britain, Arbor Low, a circle of stones on an artificially raised area, dating from the Stone Age. The afternoon is spent at Chatsworth, home of the Dukes of Devonshire, in Derbyshire. The palatial home was begun in 1687. The gardens were designed by the great Launcelot "Capability" Brown and feature a skillful blending of rolling forest, semi-formal and informal gardens. There are block-long herbaceous borders, a rose garden and box labyrinths.

Wednesday, June 24

The trip from Buxton to the Lake Country is an enchanting blend of hills, forested pastures and lakes. You stay at Windermere.

Thursday, June 25

Today's drive is through the Lake Country and a region of high hills and into Scotland. Not far north of the border, you are received at the Balfour family estate, Dawyck, by Mrs. Alastair Balfour. Here, trees from many parts of the temperate world have reached immense size. The grounds have been owned by persons interested in arborculture for 300 years. A larch that was planted there by Linneaus in 1725 still stands. The wilderness areas are heavily interplanted with rare trees and flowering shrubs of which Rhododendron, Azaleas and Laburnums make a particular show just now. After tea with Mrs. Balfour, the tour goes on to Edinburgh, where you dine at the North British Hotel.

Friday, June 26

You tour Castle Hill which looks over the city—St. Giles Cathedral, site of many historic events, John Knox House and Holyrood House. After lunch you may shop before tea at The Cedars, an intimate garden featuring a rockery and belonging to Dr. and Mrs. E. A. Cormack. Mrs. Cormack is an avid rock gardener and has a library collection of rare horticultural volumes. Dinner is at the Edinburgh apartment of Brodrick Haldane, Scottish landscape photographer.

Saturday, June 27

The entire day is devoted to the Royal Botanical Garden, one of the world's outstanding collections of living plants, both for the beauty of their arrangement and the variety. The rock gardens cover acres. There are also woodland gardens, a heather collection, an arboretum, plant families garden, experimental gardens and perennial borders. The greenhouses are the last word in modernity and offer varied climactic stiuations. A Henry Moore sculpture and handsome view of the Edinburgh skyline add to the charm of the hilltop. Dr. H. R. Fletcher, Regius Keeper of the Garden and one of Britain's outstanding horticulturists, will greet the tour.

Sunday, June 28

Two sharply constrasting castles and gardens in Perthshire will make an exciting program today. Keillour Castle, where you are greeted by Major and Mrs. George Knox Finlay, is a Victorian building on the foundations of a very old castle. The gardens are that delightful blend of improved wilderness and informal borders. Major Finley breeds plants and shows you some he has developed. Across a drawbridge to turreted Drummond Castle, its older parts dating to 1491, you find a formal garden begun in 1630 by John Drummond, Second Earl of Perth and

ancestor of the present Earl of Ancaster, who will meet the tour if he is in residence. The colorful parterre was Italiancized at the time of the coronation of Queen Victoria. Throughout the day, the General Organizer of Scotland's Garden Scheme, Mrs. Poppy Davenport, will accompany the tour, and give it the benefit of her knowledge of Scottish gardens. You dine at your hotel, which overlooks Loch (Lake) Earnhead.

Monday, June 29

Today's trip to Inverness is through misty highlands covered with gray-green heather, past flocks of long-haired, black-faced sheep, along rushing mountain streams and blue-black lochs. You stop at the Nature Trail on Ben Lawers (or Mount Lawers) for a wildflower and bird walk, with G. C. Colmer, the resident naturalist. Plants include many miniature alpine species. You dine at your hotel, the Station, in Inverness.

Tuesday, June 30

MacBeth will come to mind as you tour Cawdor Castle, setting of the final scenes of the Shakespearian tragedy. The castle is gray stone, spike-turreted and entered over a drawbridge—everything one imagines of a castle. Gardens are semi-formal and feature roses, Meconopsis poppies, Primulas and formally pruned box hedges and shaped *Chamaecyparis lawsoniana* trees. On the return to Inverness, you see the three Bronze Age cairns of Clava, the battlefield of Culloden where Bonnie Prince Charles was defeated and the lair of the Loch Ness monster.

Wednesday, July 1

Traveling north and west, you come through forested highlands past immense, deep blue lochs and finally to Poolewe, on the Atlantic. Closeness to the ocean has altered the climate enough so that on the large hillside gardens of Inverewe you find many semi-tropical plants alongside cold country pines and alpine rockery plants. The rock garden contains an unusual collection and the experimental gardens are the point of origin of many new plants to horticulture.

Thursday, July 2

You travel through Central Scotland to Helensburgh, just north of Glasgow. After lunch at your hotel, the Queen's, you tour Glenearn Garden and have tea with its owners, Mr. and Mrs. A. C. Gibson. Most of the garden is in the wilderness style. Highlights are some of the huge old Rhododendrons, one planted 130 years ago by the great Sir Joseph Hooker, who created this hybrid form, and two particularly rare and beautiful flowering vines naturalized on the estate. You view Loch Lomond before dinner.

Friday, July 3

The tour flies to London, from which you travel to nearby Wisley, the 200 acres of handsomely planted experimental gardens of the Royal Horticultural Society. The reason for this return to the London area is to see the gardens in another season, for it is now the time of peonies, roses, annuals, perennial border plants and early heaths. Dinner is at the tour hotel, Grosvenor House.

Saturday, July 4

You fly, at 2 p.m. on BOAC flight 568, from London airport with arrival at Chicago's O'Hare at 5 p.m.

Stone lion sculpture guards the entrance to Chatsworth, Derbyshire home of the Dukes of Devonshire.

CLIP AND MAIL THIS COUPON TODAY

I would like ..... (HOW MANY) reservations for Field Museum's Natural History Tour of England Scotland and Wales, "Eden Revisited: A Tour of Britain and It's Gardens." I understand the $2,445 price of the 36-day tour covers all expenses (except tips) and includes a $600 tax-deductible donation to Field Museum.

I enclose my check for a $ 600 deposit for each reservation

Name .....

Address .....

City..... State..... Zip .....

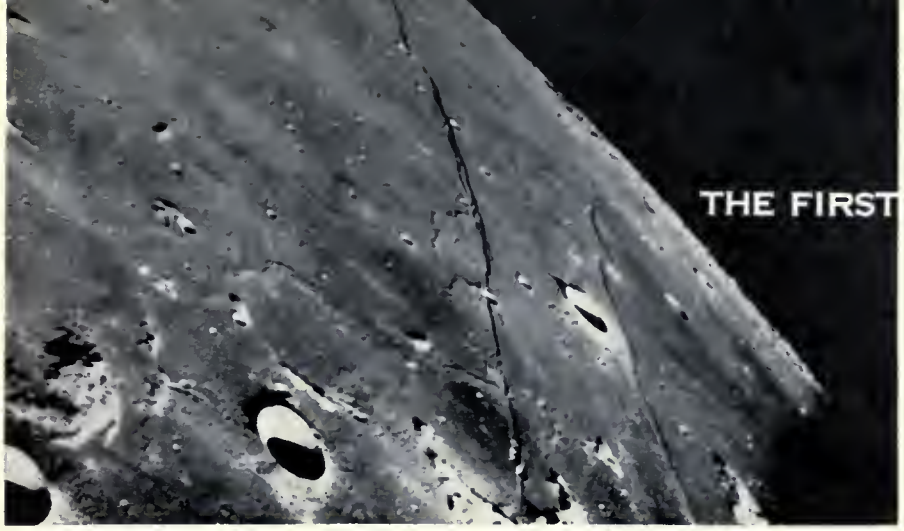
☐ Please check if single rooms are desired, at an extra charge.

Please send information about this tour to:

Name .....

Address .....

City..... State..... Zip .....



THE FIRST CHICAGO EXHIBIT OF MOON ROCKS

OCTOBER 10 - NOVEMBER 9

The Sea of Tranquility, where the Apollo 11 Astronauts collected the samples. (National Aeronautics and Space Administration Apollo 8 photo.)

Historic rock samples collected on the Apollo 11 moon landing in the Sea of Tranquility will be on public display for the first time in the Chicago area at Field Museum from October 10 through November 9 during regular Museum hours. A special Members' Preview of the moon rocks will take place from 12 Noon to 9 p.m. on October 9, following a press preview. This exciting exhibit was made possible through the cooperation of the University of Chicago and the National Aeronautics and Space Administration (NASA). Financial assistance for the exhibit was provided by The Field Foundation of Illinois.

The exhibit will include information on preliminary studies of these specimens, supplemented by a photo display and meteorites from the Museum's great collections for comparison with the moon samples. The photo display will include moon landing photos of Astronauts Neil Armstrong, Edwin Aldrin, and Michael Collins; scientists studying the moon samples, and enlargements of the actual moon rocks.

Scientists expect to find many long-sought answers to questions about the origin and nature of the moon as research continues. Preliminary studies of the lunar rocks have already suggested some interesting answers to the questions man has asked about the moon.

Preliminary studies indicate that long after the Earth formed and was a cooler, solid body, the moon passed near it and was caught in its gravitational field. Other theories had suggested the moon and Earth (and perhaps Mars) condensed together out of a hot mass of matter as it swirled around the primitive sun, or that the moon was torn out of the Earth by the gravitational pull of a passing star. Significant differences in chemical composition of rocks from the moon and those found on Earth indicate the two bodies did not have a common origin.

Rocks similar to basalt, or gabbro, but with significant differences in chemical composition, minerals, and textural features were found at Tranquility Base. The lunar rocks have too much titanium and too little sodium in them to be identical with the common basalts or gabbros found on Earth. Before Apollo 11 we expected to find a dead, airless planet made of rock like basalt or gabbro since these rock types best fit the color, density and light reflectivity observed on the moon.

"Glass beads," the origin of which is presently unknown, were one of the distinguishing characteristics of the rock samples from the moon. No similar beads are found on Earth. It is possible that they were formed in the vacuum of the moon from molten rock splattered by meteorite impacts or volcanic activity. Red glow spots, probably due to small lava outpourings, have been seen through telescopes several times in the last 10 years.

The craters on the moon are considered to be the result of two processes: large meteorites impact the moon's surface and explode. This triggers the melting of rock below the explosion crater causing lava to flow out onto the crater bottom.

Prior to the Apollo 11 success, chance encounters with meteors have provided the only samples available for study from outside the Earth. The moon is pitted with the craters caused by the impact of meteors and its surface should have many meteorite fragments scattered over it.

Further study of these moon rock samples will probably confirm many of these tentative conclusions. Undoubtedly, they will also create a great many new, unanswered, questions. The samples on display at the Museum are to be used by several scientists affiliated with the University of Chicago and Argonne National Laboratory in research projects approved by NASA which relate to special problems presented by this material.

The principal investigators on the various research teams are Professor Joseph V. Smith, Professor Edward Anders, Professor Stefan Hafner, Professor Robert N. Clayton, Professor Anthony Turkevitch and Dr. George Reed. Dr. Reed is with Argonne National Laboratories. The other scientists are from the University of Chicago.

Fiesta Mexicana in pictures

Musicians of the Mariachi Potosino from Chicago contribute the sounds of Mexico to the Festivities of a special preview evening for Museum Members.

The sights and sounds of Me
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de Turismo Museo Nacional
Community.

Elaborately costumed dancers of the Balet Folklorico de Frederico Z. Rodriguez perform exciting stylized folk dances of Mexico for Fiesta visitors. The dancers are from the Chicago Mexican-American Community.

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The contemporary Mexican tiger costume is examined by Mr. Amado Coronado and his sons, Eduardo, Rudolfo and Ricardo, visitors to the Fiesta Mexicana.

) filled Field Museum this fall when Fiesta Mexicana was presented. For ost to Mexican artisans—a weaver, a flower-maker, a jeweler, a pinata- emonstrated their skills amidst static displays of historic and contemporary also featured 75 Mexican costumes related to different geographic areas d by the National Museum of Anthropology in Mexico City. In Stanley performed centuries old dances and chants, and groups from the Chicago ntertained Museum visitors with folk dances inspired by Spanish influences. ılute to the Mexican-Americans of Chicago. The program was designed into closer contact with the cultural mainstream of Chicago and to pro- r insight into the origins and variety of Mexican contemporary art, dance al Assistance for the Fiesta Mexicana was provided by the Illinois Arts ert McCormick Charitable Trust; the Bertha LeBus Charitable Trust; Mexi- wment for the Humanities; Consejo Nacional de Turismo, Departamento Antropologia, of Mexico; and members of Chicago's Mexican-American

Mr. and Mrs. R. Budnick examine an intricately embroidered Huichol Indian costume from a group of 75 costumed mannikins loaned to the Museum's Fiesta Mexicana by the National Museum of Anthropology in Mexico City.

Mrs. Elvira Villa- of Chicago and ghter, Clara, 10, rate how the fes- tas are made.

rk involved in hand- is demonstrated for bit's "Mexican Mar- fo Martinez, a weav- f Mexico.

When in the early morning the sun rises and the flowers spread their petals in the fields I walk with great joy and eat.
At mid-day when I go to rest in the shade I walk cautiously for fear of the hunter and I sniff the breeze to locate him and hide.
When the sun is setting I go to the beach to play and to my resting place to be ready to eat flowers in the morning.

The "deer dance," indigenous to Precolumbian Mexico, is performed by Jesus Alamea, a Mayo Indian from Ahome, Sinaloa. Four singer-drummer accompianists complete the performing group. The deer dancer's leggings are cocoons with stones inside to create a rattling sound. The chant of the singers is translated at the left. (Photo by Nickerson)

Paleontological Convention *Notes . . .*

By Eugene S. Richardson, Jr.
Curator, Fossil Invertebrates

When the paleontologists of North America felt the need to meet together for the first time, rather than in the traditionally separate annual meetings of their five professional societies, the site chosen was Field Museum, September 5–7, 1969. Early in the planning it appeared that perhaps as many as 500 specialists might come: palynologists, vertebrate and invertebrate paleontologists, micropaleontologists, stratigraphers; members from the oil industry, museums, universities, state and federal surveys. The actual attendance was nearly 700. This final program of the Museum's 75th Anniversary Year filled a busy and spirited weekend.

The technical sessions, developed by Dr. Ellis S. Yochelson, United States Geological Survey, consisted of 14 symposia with invited speakers, the topics ranging widely: Teaching Paleontology, Phosphate in Fossils, Higher Biologic Categories, Reefs, Ultra-microplankton, and others of broad interest to the profession. Symposia met three at a time, using James Simpson Theatre, the Lecture Hall and part of the Hall of Fishes. Special exhibits occupied the stair landings, three of them calling attention to the collecting and investigating activities of amateurs. A small loan exhibit from the United States National Museum displayed some of the celebrated fossils of soft-bodied animals from the Middle Cambrian Burgess Shale of British Columbia, many of them known to Field Museum visitors from the skillful restorations in a habitat group in Hall 37.

One of the Convention's most dramatic events began unexpectedly during the two-hour lunch break on the first day of the Convention. William G. Melton, University of Montana, unwrapped a small parcel of recently collected Coal Age

Photo, top: *Dr. Harold Scott (left) of the University of Illinois, Urbana, announced the discovery of the conodont animal by William Melton, Jr. (center) of the University of Montana. Dr. Eugene S. Richardson, Jr. (right), Field Museum's Curator of Fossil Invertebrates, chats with them during a break in the meetings.*

Photo, center: *Dr. Marvin Weller (left), an expert in stratigraphy from the Walker Museum, University of Chicago, and Dr. Alfred S. Romer (right), Museum of Comparative Zoology, Harvard University, a pioneer in paleontology in the United States, were among the distinguished scientists attending the Convention. They are shown with Mrs. Weller and Mrs. Romer in Stanley Field Hall on the banquet night.*

Photo, right: *An unidentified Convention visitor studies one of the paleontological exhibits, a series of x-rays of Devonian fossils, the unusual hobby of Dr. Wilhelm Stürmer, a physicist from Erlangen, West Germany. Dr. Zangerl gave a special report on these x-rays at the Convention.*

fossils from the Little Snowy Mountains, principally fishes. Curators Zangerl and Denison examined them with a microscope. The fishes, including several kinds of both sharks and scaly fishes unknown to science, drew their first attention. But there were also several soft-bodied bottom-dwelling invertebrates, a type of association reminiscent of the two great Coal Age faunas with which the Museum has long been involved (Indiana black shales and Illinois ironstone concretions). While looking closely at one of these strange forms, Dr. Zangerl realized that he was actually seeing the long-sought "conodont animal." This was speedily confirmed by several conodont specialists, rounded up from among Convention members. Conodonts, tiny tooth-like structures, have been known for more than a century, and have been intensively studied, but never had a trace been seen of the animal they belonged to. The problem of how to place conodonts in the biological classification has given rise to a voluminous though indecisive technical literature. The makings of an answer were now at hand. When the afternoon session of the scheduled symposium on "Extraordinary Fossils" was called to order, Melton, first on the program, gave his paper on the occurrence of the Montana fossils. Word that something was afoot had gotten about and some 500 paleontologists were present. Then, by prearrangement, Melton introduced Dr. Harold Scott of the University of Illinois, who formally announced the new discovery and showed a lantern slide of one of the five specimens, hastily but clearly photographed by Denison.

This Convention will long be remembered by those attending, and not alone for the exciting discovery of the conodont animal. The scholarly environment, the careful preparation of the sessions, the Museum's facilities, the energetic help of volunteers, the participation by amateur paleontologists—all contributed toward its success.

Photos, from top: *Social highlight of the Convention was a banquet held in Stanley Field Hall; W. S. Hopkins, a member of the Geological Survey of Canada, Alberta, looks over a display of fossils loaned by the Eastern Missouri Society for Paleontology, one of several amateur groups which loaned materials for exhibits; Dr. Rainer Zangerl (center), Curator of Geology at the Museum and Convention president, chats with the banquet's keynote speaker, Dr. Philip H. Abelson, who spoke on "The Evolution of Proteins." Mrs. Zangerl is at the left; Several foreign guests attended the Convention, although it was geared toward North American paleontologists. Here three Japanese scientists, Toshima Tanai (left), Sapparo, Kinji Konishi, visiting professor at the University of California, Riverside, and Tokio Shikama, Yokohama, inspect an exhibit of Mazon Creek fossils.*

PEWTER:
the collector's alloy

BY PATRICIA M. WILLIAMS
FIELD MUSEUM PRESS

A charming pewter piece depicting a little boy playing a flute as he rides a water buffalo. The buffalo's lead chain is of brass. The figure is among the pieces in a large Chinese pewter collection donated to the Museum by one of its early benefactors, Edward E. Ayer.

Although pewter has been cherished for centuries, it does not have the glamor or intrinsic value of gold or silver. There has never been a Pewter Rush; a pewter standard to rise and fall; a legendary lost pewter mine or fortune-seekers panning for pewter. Nonetheless, pewter, a tin alloy, is currently enjoying a great resurgence of popularity and novice collectors are busily learning the pewterer's terminology. Many of these terms sound as if they were culled from *Alice in Wonderland*—consider: booge, cloff and limbeck. These are easily equalled by hanap, cri, mutchkin, quaigh, and writhen-knop.

For all of that, however, pewter is not mere whimsy or a passing fancy. It "has played an important part in the development of civilization, both as a medium for artistic expression and as a material from which domestic utensils were fashioned," wrote the historians of pewter, B. M. Osburn and G. O. Wilbur. Although it is not now on display, Field Museum possesses a fine collection of pewter illustrating the history and uses of pewter in China and elsewhere.

The exact date when pewter was first used cannot be pin-pointed, but it is known that some 2,000 years ago the Orientals were making pewter with great skill and craftsmanship. These ancient pewterers used an alloy of tin with a large percentage of lead, as this type of pewter was soft and easy to work. Later, they developed a harder and more brittle pewter containing a large proportion of antimony which was adapted for casting and stamping intricate and delicate forms. They also engraved graceful designs on their pewter and inlayed it with gold, copper, brass, jade and ivory. According to Emanuele Stieri, "The ancient Japanese metal craftsmen employed a few special secrets of their own in the handling of pewter. Their work is of such a curious tint that if it were not a fact, one would hardly believe these articles were made of pewter. Once the old craftsmen finished a piece of work, that piece of metalcraft was never polished. It was only rubbed with a soft rag. After some time, the surface of the metal became coated with a faint green rust. This rust was usually two tinted, the lighter forming the ground and the darker tint of rust showing in patches which gave the old piece an artistic luster."

The Museum's collection, which was gathered and donated by the Museum's first president, Edward E. Ayer, contains a great deal of Chinese pewter, some dating back to the Ming Period (1368–1644) and other pieces dating to the Kang-hi Period which ended in 1722. Dr. Berthold Laufer, the late world renowned authority on the anthropology of China and Chief Curator of Anthropology, obtained many of the choicest specimens of Oriental pewter for the Ayer Collection. There are Chinese candlesticks, teapots, ewers, chafing dishes, finger bowls and a number of unusual serving pieces lining the Museum's shelves. A bowl for serving duck is covered with a figure of a duck; a bowl for fish is topped by a fish. The cover of a large chaf-

ing dish is shaped like two peaches with leaves and, inside, the dish is separated into five covered compartments. The five covers are ornamented by, respectively, a goose, a duck, a crane, a carp and a deer. Finally, an engraved motto—"May you rise in office as high as the sun"—completes the trimming. This dish must have been an ideal wedding gift—if the bride's cooking was a disaster, the groom could still enjoy the dish it was served in.

Mr. Ayer purchased many pieces of Chinese pewter from Miss Grace Nicholson, owner of the Oriental Shop in California and, in a letter to Frank C. Lockwood, author of *The Life of Edward E. Ayer*, Miss Nicholson related the following conversation between Mr. Ayer and Mr. Hartman, buyer for the Oriental Shop:

This unusual Chinese serving dish is for serving fish, as indicated by the design of its cover. The fish's eye is made of green glass. This was collected by the late Berthold Laufer in Peking during the Mrs. J. B. Blackstone Expedition of 1908–10.

"Charley, I want to make the Ayer collection of old pewter world renowned."

"That is easy," Mr. Hartman replied. "Why not start right now and buy our old Chinese pewter?"

"But there is no such thing," said Mr. Ayer, astonishment in his voice. "I want real pewter—rare pieces—for I won't get much encouragement from the Museum unless they are unusual."

Mr. Hartman left the room and soon returned with four odd-shaped pewter dishes and a candlestick.

"Are you sure these are pewter, Mr. Hartman? Dr. Laufer would laugh at me if I sent them to the Museum and they proved to be imitations."

Miss Nicholson handed him a glass and requested him to scratch one of the articles on the base. He did so; satisfied himself that this was genuine pewter and forthwith bought more than forty pieces. From that time on he cared little about Europe and American specimens, but bought every Oriental piece he could secure. These purchases from Miss Nicholson formed the basis of the extensive Chinese collection of which he was so proud."

While there are no examples of it in the Ayer Collection, "Specimens of Roman pewter excavated in England leave no doubt that pewterware was made in England by the Roman legions." At the time of the Roman invasion of Britain (55 B.C.) the Romans had already developed considerable skill in pewtercraft. Besides making pewter utensils, the Romans used pewter for coins and seals of office. Many of these ancient Roman seals, which were of all shapes, sizes and forms, have been found in the county of Westmorland, England, but because they made excellent solder, they have been almost entirely destroyed by the tinkers of the area.

The development of pewtercraft in most European countries was obscured during the Dark Ages. Pewter was forbidden for church use at the Council of Westminster in 1175 but by 1194, when church plate was requisitioned to ransom Richard I, it seems to have been in use. Apparently, it was allowed when gold and silver were not available and was distinctly permitted in France by the Councils of Nimes in 1252 and of Albi in 1254.

Pewter was used regularly by various Inns of Court and for a long time it was a kind of tradition that, on giving up their silver plate to further the cause of Charles I, the Inns were graciously allowed to have pewter of the same shape and with the same hallmark as evidence of the loan of silver and as a pledge for its eventual return.

Despite the widespread use of pewter in continental Europe, England was undoubtedly the pewter center of the medieval world. There is no record stating definitely when the pewter craftsmen of England first met together, but there is a record of a pewterers' group meeting in 1305. Then, "during the reign of Edward III (1348) a number of prominent English pewterers, who had a tremendous pride in their craft, established a well-organized guild to prohibit dishonest workmanship or products and to protect the industry of pewterers by eliminating those who did not adhere to the strict regulations of the guild." This guild became very powerful and passed laws giving themselves the right

Bamboo leaves of highly polished brass are inlaid in this pewter serving tray from the Edward E. Ayer Collection. The rim is bordered by brass and three rows of a triangle pattern. The piece is partially varnished in black.

The familiar dragon motif is employed in this censer. The creature carries a house on its back. (Edward E. Ayer Collection.)

to destroy all poor and inferior pewter. Naturally, this resulted in a lot of in-fighting and name-calling and competitors busily turned in reports of punk pewter on one another. In 1503 the guild was granted a charter by the crown and became known as the Worshipful Company of Pewterers. The guild's monopoly of pewtercraft held firm until early in the eighteenth century when modern inventions and dissension began to corrode the guild's strength. By 1851 pewtercraft was officially listed as a nearly extinct art.

In the Museum's Ayer Collection there are a number of pewter guild cups, or hanaps, dating back to the Worshipful Company of Pewterers' period of influence. They are elaborate things, generally 17 to 24 inches high, covered with curlicues, crests, figures and engravings. A seventeenth century tanners' guild cup from Germany has eight fancy medallions hanging from lions' heads carved on the sides of the cup, an armored knight with a pennant on the top of the cup and the whole thing is supported by three winged heads.

Many of the tankards in this collection are every bit as ornate and imaginative as the guild cups and some look as though they were designed by Walt Disney. For example, a tall tankard from Austria is shaped and engraved to look like a medieval tower. Halfway up the tower is a little balcony with a tiny man standing on it and a brass coat of arms completes this ale-drinker's delight. Another rather spectacular tankard is from Germany and the lid features a spread-winged eagle holding a key in his beak. At the base of the tankard is an arched niche containing a three-inch-tall knight in tarnished armor.

The Worshipful Company of Pewterers also played a part, although a negative one, in the development of American pewter. The guild discouraged the emigration of English pewterers to America because, in part, they wanted to sell their own pewter to the colonies. They were very successful with this gambit and as late as the mid-eighteenth century the value of pewterware shipped to America compared very favorably with that of other important commodities. England also slowed up the development of a native pewtercraft in America by being reluctant to sell tin, one of the chief ingredients of pewter, to the colonies. Eventually, pewterers did come to America from European countries and, finally, from England. Pewter became more popular in America than in any other country and pewter pieces of all kinds were used here longer than anywhere else.

During World War II and until 1953, the manufacture of pewter wasn't allowed because tin was reserved for essential purposes. However, since the removal of these restrictions, the world production of pewterware has exceeded the amount of pewter produced in any similar period in history.

The manufacturers of the best modern pewter proudly boast that their product contains no lead, but is generally composed of about 91% tin, 7.5% antimony and 1.5% copper. The copper adds ductility and working properties and antimony whitens and adds hardness. In addition to these physical properties, the Royal Holland Pewterers claim that the manufacture of pewter "demands a sympathy and knowl-

edge and craftsmanship that cannot be gained on a production line, or by a few years' apprenticeship." Artistic and mystic requirements aside, pewter is very easy to work. It can be stretched, compressed and bent into almost any shape, will not harden or stiffen as it is being worked and resists oxidation indefinitely.

In the last ten years, as modern pewter has grown in popularity, the ranks of enthusiastic collectors of antique pewter have swelled tremendously and the competition for genuine antique pieces is keen. Unfortunately, very little of the early pewterware has survived and it is unusual for a collector to find a piece dating back beyond the seventeenth century. This is partly because most pewter was used for domestic utensils and took a lot of abuse. It was inexpensive to begin with and, as the users knew it could be easily recast, they probably took very little care of it. In the Middle Ages travelling pewterers went from town to town repairing damaged pieces of pewter or melting down old pewter to create new articles. During World Wars I and II many valuable pieces of pewter in England were sold for scrap and thus further depleted the world's remaining fund of old pewter.

This scarcity, of course, increases the interest and value of the pewter collection gathered by Edward E. Ayer for Field Museum. Ayer was "a natural-born collector" and collecting "was his chief recreation and delight." When asked how he became interested in pewter, Ayer answered, "The only things in the world which are without interest are the things of which we are ignorant. . . . The moment we know a little about a thing it becomes interesting to us, and then we are led on indefinitely in pursuit of it. . . . So it was with this wide interest that I began to take note of the pewter in the museums of Europe." The beginnings of the pewter collection were given to the Art Institute, but later, as it grew, the whole lot was transferred to Field Museum where it has added its muted luster to the Museum's great store of treasures.

Right: *Intricate Chinese serving piece contains five separate food compartments with small covers bearing figures of a duck, a carp, a goose, a crane and a deer. The handle for the main cover is shaped like two peaches with leaves. It is from the Edward E. Ayer Collection.*

Left: *Pewter dish for serving duck has three parts; a lower bowl to hold hot water, an inner bowl which contains the food, and a cover in the form of a duck. The piece is from China, one of a collection made on the Blackstone Expedition in 1908–10.*

Glossary of Terms

booge: the part of a plate between the rim and the bottom.
cloff: scrap metal
cri: the name given to the crackling sound emitted by tin and by good pewter when bent.
mutchkin: a Scottish messure containing five gills.
limbeck: a still
hanap: a goblet
quaigh: a shallow circular drinking vessel, somewhat like a deep saucer.
writhen-knop: a rare type of knop (knob).
Reference: *Chats on Old Pewter*, by H. J. L. J. Masse.

The annual Jewel Foundation grant is presented to E. Leland Webber (right) by William H. Newby of Jewel Companies, Inc. The Trustees of the Jewel Foundation this year approved an increase from $1,000 to $2,000.

In the next few months firms and corporations as well as interested individuals will be asked to support the Field Museum year-end effort to raise an additional $470,759 to balance the 1969 budget.

CALENDAR OF EVENTS

October hours: 9 a.m. to 5 p.m., daily.

October 4 Fall Film-Lecture Series "Hong Kong," by Ray Green. A color film study of the bustling, crowded, exotic crossroads of the Orient. 2:30 p.m., James Simpson Theatre. Free.

October 5 Fiesta Mexicana Lecture Series concludes with "The Precolumbian Past of Modern Mexican Culture," by Carlos R. Margain, an archaeologist and Secretario Tecnica of the National Museum of Anthropology in Mexico.

October 11 Fall Film-Lecture Series "Hawaii," by Ed Lark, covers the history and development of the exciting Islands as well as the contemporary scene in our 50th state. 2:30 p.m., James Simpson Theatre.

October 18 Fall Film-Lecture Series "Pageant of India," by Gerald Hooper, is an exciting color film study of the diverse customs and many cultural contrasts in this ancient country. 2:30 p.m., James Simpson Theatre.

October 25 Fall Film-Lecture Series "Brazil," by Clay Francisco, explores this South American "giant" from the untouched wildness of the Amazon River jungles to the sophisticated and vibrant city of Rio de Janiero. 2:30 p.m., James Simpson Theatre.

November 1 Fall Film-Lecture Series "Lion Pride," by Cleveland and Ruth Grant, is a rare and sympathetic film of the daily lives of these beautiful animals in several African locations. 2:30 p.m., James Simpson Theatre.

November 8 Fall Film-Lecture Series "Europe's Miniature Countries," by Lisa Chickering and Jeanne Porterfield. Interesting and sometimes surprising details are shown in films from Leichenstein, Andorra, SMOM, San Marino, and Monaco, 2:30 p.m., James Simpson Theatre.

November 8 Fall-Film-Lecture Series "Thailand," by Kenneth Armstrong. The many facets of everyday life in this exotic country are shown against the background of preparation for possible conflict with Red China. 2:30 p.m., James Simpson Theatre.

Through October 5 Fiesta Mexicana Live dance and musical entertainment, demonstrations by Mexican craftsmen, exciting displays of Precolumbian, Colonial and contemporary Mexican art, and a photographic essay of Chicago's Mexican community, by Orlando Cabanban, form the basis for the Fiesta, the Museum's salute to the Mexican population of Chicago. Formal entertainment programs in Stanley Field Hall are scheduled for 11 a.m., noon, and 3:30 p.m., Tuesday through Friday; 11 a.m., 1 p.m., and 3:30 p.m. on Saturday; and at 1, 2:30, and 4:15 p.m. on Sunday. Films about Mexico will be shown daily. No demonstrations or entertainment on Monday. Handcrafted Mexican jewelry and other crafts for sale at the "Mexican Market." The Fiesta is open during regular Museum hours.

Through October 12 Art and Life of the Cuna Indians Temporary exhibit on the Indians of San Blas, Panama. The people are highly independent as a slide-show of their activities shows, yet they often express outside influences through their arts, with surprising and beautiful results. Hall 9 Gallery.

Through November 16 Field Museum's 75th Anniversary Exhibit The three-part presentition—A Sense of Wonder, A Sense of History, A Sense of Discovery—shows the scope of the Museum's activities since its founding after the World's Columbian Exposition in 1893. Many of the Museum's choicest specimens are part of the dramatic and unusual display. Hall 3.

Through October Fall Journey Mexico Self-guided tour for boys and girls concentrates on both Precolumbian and Contemporary Mexico, depicted in Hall 8. Free Journey sheets and information on the Raymond Foundation's Journey program are available at Museum entrances.

CALENDAR *(continued)*

MEETINGS:

Chicago Mountaineering Club,
October 9, 8 p.m.

Chicago Shell Club,
October 12, 2 p.m.

Nature Camera Club of Chicago,
October 14, 7:45 p.m.

Illinois Orchid Society,
October 19, 2 p.m.

Illinois Audubon Society,
October 26, 2:30 p.m.

FIELD MUSEUM
OF NATURAL HISTORY
ROOSEVELT ROAD AT LAKE SHORE DRIVE
CHICAGO, ILLINOIS 60605 A.C. 312, 922-9410
FOUNDED BY MARSHALL FIELD, 1893
E. Leland Webber, Director
BULLETIN
Edward G. Nash, Managing Editor

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BULLETIN **FIELD MUSEUM OF NATURAL HISTORY**

Volume 40, Number 11 November 1969

PROFESSOR ORLANDO PARK
1901 - 1969

On September 23, Field Museum lost a distinguished Research Associate with the death of Orlando Park, Professor of Biology, Northwestern University. Prof. Park joined the faculty of Northwestern in 1934. He was made a Research Associate (insects) of the Museum in 1955. In 1968, he retired from the University to devote full time to his favorite research specialty, the systematics and biology of pselaphid beetles. He was internationally recognized as an authority on this family.

But Professor Park was best known to the scientific community at large as an ecologist, and most of the more than 100 papers that he wrote or co-authored dealt with ecology. He was a pioneer in the study of activity rhythms of animals in relation to nocturnal ecology of forest communities. He was co-author of two ecology books, including the classic *Principles of Animal Ecology* written with W. C. Allee, A. E. Emerson, T. Park, and K. P. Schmidt, and also wrote a textbook on entomology, soon to be published. His eminence in ecology was recognized by election to the Presidency of the Ecological Society of America in 1945. He was a member of more than a dozen other scientific societies, and was a Fellow of the Entomological Society of America, the National Speleological Society, and the American Association for the Advancement of Science. Since 1953, he served as a Consultant to both the Division of Biology and Medicine of the Atomic Energy Commission and the Oak Ridge National Laboratory.

While the professional achievements of a scientist may be impressive, they tell little about him as a person. "Lan" Park was an extraordinary person. To those outside his family he kept various facets of his life in separate compartments, and took some pleasure in keeping them so. Friends had to find out about him for themselves. Despite a bluff exterior, he was extraordinarily sensitive. His sensitivity extended to his concern for his family and to his students.

He was born in Elizabethtown, Kentucky, October 13, 1901. As a youngster he spent much time stalking and playing Indian in the forest, and he developed an enduring love of nature. At age 14, he wrote the first of a series of still unpublished nature stories, with such intriguing titles as "Bosky Beetle" and "Diana of the Forest". He continued writing these throughout his adult life.

When he was about 17, Park moved with his family to Ocean Springs, Mississippi. There he somehow came under the spell of Lil Hardin, wife of Louis Armstrong, who taught young Lan to play chord jazz piano. He not only came to know many of the great jazz pianists, but during his University years, he helped defray his school expenses by playing himself. Most of his professional acquaintances knew nothing of his virtuosity until they heard him play with the "Academic Cats", a "combo" composed of scientists and professors from Northwestern University and the Chicago Academy of Sciences. Yet, Park could not read music.

The late
Dr. Orlando Park

One of the greatest surprises to his colleagues was the announcement in the Chicago papers, of a book entitled "Sherlock Holmes, Esq. and John H. Watson, M.D., An Encyclopaedia of Their Affairs", authored by Orlando Park and published by Northwestern University Press, in 1962. We had known "Lan" for nearly 30 years, yet knew nothing of this interest. He was an active member of the Baker Street Irregulars.

Professor Park is survived by his wife Betty, his daughter Patricia Englemann, his mother Mrs. Samuel P. Park, and his brother, Professor Thomas Park of the University of Chicago. His personal research collection of pselaphid beetles, second in importance only to those of the Paris and British Museums, has been willed to Field Museum, together with his library.

—Rupert L. Wenzel, Curator of Insects

What Makes *Orchids* So Special?

By Patricia M. Williams
Field Museum Press

Florists have been instructing us to "say it with flowers" for years. If you're going to take their advice, you might as well let orchids do the talking. Orchids have long been acclaimed as the aristocrats of flowers—the exotic ultimate in mystery and, usually, price.

Rex Stout, the creator of the fat and fabulous fictional detective Nero Wolfe, once wrote, "Of all flowers going, the orchid is the least compatible with office desks and the sort of things that take place at them. A banker or businessman may have on his glass top desk a vase of sweet peas or peonies, or a bowl of pansies, without arousing any suspicion of his soundness or integrity; but what would be thought of one who sported a pair of orchids alongside the morning mail? An orchid is not a flower as a gladiolus or a poppy is a flower; it is a signal for seduction, a beckoning of the exotic, a banner of sophisticated romance.

"For no good reason. Other flowers have come from strange and inaccessible places; others are expensive; others are large and flamboyant and have suggestive forms; others look well at the girdle or on the shoulder of a pretty woman. But an orchid is an orchid. So...."

This month's cover is the charming title page of a rare study of Indonesian orchids. The book, published in Amsterdam in 1858, was written by Charles de Blume, Director of the Royal Herbarium at Leiden. It is in the collection of Louis Williams, Chief Curator of Botany.

Popularly known as "Lady's Slipper," Cypridium reginae *is one of the several orchids occurring naturally in northern Illinois. It can be found in forest preserves and woodlands in the spring.* (Photo by Albert Vatter.)

So men hunt, grow and buy them with as much enthusiasm as they tell great tales about them. There are stories told of a marvelous orchid that was owned and treasured, but for some unknown reason slowly dwindled and died away until its lovely blooms became only a memory. The cavalry to the rescue! The British army forced its way into the closed boundaries of Tibet—presumably on other business—and restored the lost orchid to the world.

One variety of *Dendrobium,* a particularly lovely orchid, came to the auction room in London from Burma where it was found growing on a skull—the skull, it was said, of a man who had given his life to find the exotic flower and failed.

Over the years many men have hunted orchids with varying degrees of success. Captain Bligh of the HMS Bounty brought a few orchid plants to England from Jamaica in the latter part of the eighteenth century and as early as 1519 Cortez' men discovered the vanilla orchid in Mexico. Although fewer in number, there are still orchid hunters in Brazil, Peru, Asia and Costa Rica today. At first it seems like an easy, glamorous way to earn a living—walking through tropical forests scanning the swaying treetops for beautiful orchids—until you remember that the trees in the tropics house many forms of plants and animal life, not all friendly, such as termites, hornets, ants, and snakes. There are other factors which would not meet any union's standards of acceptable working conditions—fevers, poor or non-existent housing, unfriendly natives, impure water, and irregular payment. The fringe benefits must be terrific, however, because as an old orchid hunter said, "You'll curse the insects and you'll curse the natives. Your lips will crack and you'll lick them and taste the salt of your own sweat. The sun will burn you by day and the cold will shrivel you by night. You'll be racked by fever and tormented by a hundred discomforts, but you'll go on. For when a man falls in love with orchids, he'll do anything to possess the one he wants."[1]

Although he shows no signs of being cracked, burned, shrivelled, racked or tormented, Dr. Louis O. Williams, Chief Curator of Botany, has hunted and loved orchids for years. Recently voted an Honorary Member in American Orchid Society for life and the former editor of both the *American Orchid Society Bulletin* and *Ceiba*, he has described literally hundreds of orchids. Of the over 200 articles Dr. Williams has had published, more than half of them have been on orchids.

Accustomed as we are to seeing only a few varieties of orchids decorating a centerpiece or perched on a woman's shoulder, it may seem surprising that Dr. Williams has found so much to say about them. However, the Orchidaceae is one of the largest families of flowering plants in the world, consisting of several hundred genera and 15,000 or more species and varieties are found over

[1]*MacDonald, Norman,* The Orchid Hunters · *Farrar & Rinehart, Inc., New York, N. Y. 1939.*

Lycaste virginalis alba
orchid, is the national flo

The only orchid plant which currently
as contrasted with decorative, use is va
A model of this plant, from which va
is on display in Hall 28.

white nun
Guatemala.

Orchids growing wild in the forests of British Guiana. These are Oncidium lanceanum.

One of the most beautiful tropical American orchids is Cattleya schroederae.

ractical,
anifolia.
derived,

practically the entire globe. Of course, many do not grow in the arctic regions or in the arid sections of the continents. According to Dr. Williams, the Lae Peninsula of New Guinea has the most and widest variety of orchids, more than any comparable area in the world.

It was not in orchid-covered New Guinea, though, that Dr. Williams saw his most memorable display of orchids. It was near Diamantina, State of Minas Gerais, Brazil, He had come to the edge of a limestone sink, and there, many feet below, was a tangled, lush green forest crowned with thousands of blooming orchids—*Cattleya labiata,* an especially colorful bloom.

An orchid does not have to be large and glamorous to find favor with Dr. Williams. He denies having a favorite orchid—"I like them all"—and mentioned recently coming across a tree covered with very small—only 1 cm. high—but very lovely *Pleurothallis* orchids.

Vanilla is the only commercial product of the large orchid family and Dr. Williams and his wife make their own. They buy a pound of vanilla pods from a pharmacy in Tegucigalpa and, following the recipe in the National Formulary of the United States, prepare enough vanilla extract to last for a couple of years. The Williams' claim that there is a definite difference between the commercial product and their own and that may well be. Mrs. Williams substitutes vodka for the alcohol and water called for in the recipe.

Although the manufacture of vanilla is the only non-ornamental use for orchids today, the plants did have other uses in the past. It was once believed that orchids had restorative and procreative powers and that they were of use in easing painful illnesses. More than 2,000 years ago the Greeks, Theophrastus and Dioscorides, advanced the theory that most plants, including orchids, could be used medicinally. Throughout Europe, especially during the Renaissance, these ancient Greek ideas were followed and even today primitive people in some parts of the world use orchids as medicine. But modern doctors and druggists don't agree with the old Greek ideas and not a single species of orchid has been retained in today's pharmacopoeia as an indispensable source of any drug.

Though they have no pharmaceutical value, their beauty alone has made orchids the basis of a multi-million dollar industry in the United States and England. In his book *American Orchid Culture,* E. A. White wrote, "An orchid is a mysterious flower in every sense of the word, in origin, coloring, and form; in its culture and also in its effect on the minds of people. Just as mysterious as the orchid bloom itself, is orchid distribution by growers and wholesalers. No one outside the florist industry can possibly understand the delicacy with which the sale of orchids is supervised and the mechanical perfection with which the fluctuation of price is guided according to the supply and demand."

At Dr. Williams' suggestion I visited Hausermann's Orchids, Inc. in Elmhurst, Ill. This family operation,

which has 115,000 square feet devoted to the exotic blooms, produces an annual yield of 400,000 orchids. Although they sell an average of 7,000 to 8,000 orchids a week, in the week before Mother's Day—their biggest holiday—they sell 50,000. Even on paper that's a lot of orchids, but when you stand in the midst of thousands of orchid plants it's simply overwhelming.

The Hausermanns have been working on meristem culture, a comparatively new method of orchid growing which they hope will be able to assure not only healthier, more durable and lovelier flowers, but a controlled blooming time as well. Leaving the meristem laboratory, Ernie Hausermann joked, "We just hope that we won't be a week or so off in our calculations. Then there we would be—one week after Mother's Day—stuck with 50,000 orchids in full bloom that nobody wants."

All of the orchids at Hausermann's require and get special care. There are elaborate watering systems and temperature and lighting controls. Ernie told me that when the wind turns and comes blowing out of industrial Chicago the pollution can and does kill 20-30 percent of the blooming orchids. That's bad enough, but in Los Angeles, long the smog capital of the world, orchid growers have lost 90 percent of their orchid crop to pollution.

Orchid crop? It sounded strange to me, too, but the Hausermanns refer to themselves as farmers and their fabulous orchids are a crop to them just as alfalfa, corn or beans are to another, more average, farmer. They don't rhapsodize or wax poetic over their beautiful crop. A particular favorite of Ernie's rated being called "cute" or "a nice little thing." Although he used such prosaic words, I'm sure he is constantly aware of the beauty of his annual bumper harvest. He delighted in opening cartons prepared for shipping and astounding me with double rows of outrageously lovely, Supreme-sized *Cattleya* orchids.

While the bulk of their business is in these corsage orchids, the Hausermanns have devoted 5,000 square feet to orchids for the hobbyist. In these orchid rooms are the flowers that orchid hunters search for and that botanists write about. Many of these seldom-seen orchids are bought from orchid hunters and some of them are hardly recognizable as orchids at all. They are waxy and thick and the color is spotty—almost like a bad plastic reproduction; others are surprisingly hued. There are fire engine red orchids, brown spotted ones and sunshine yellow orchids. The delicate intricacy of a spray of tiny tropical blossoms is utterly charming and in its way far more attractive than some of the huge and violently colored florist's orchids.

These unusual orchids are sold to the many orchid fanciers across the country. There are a number of orchid societies and a library could be filled with books on orchids alone. For example, Field Museum has published 1,744 pages of scientific orchid literature and has found a ready market for them. Dr. Williams, who has a large and impressive library of orchid books, told me that in keeping with the enthusiastic interest in them, the price of orchid books has soared tremendously in recent years.

"What," I asked him, "accounts for this enthusiasm for orchids? Why do people pay so much just to read about them? Why do they devote so much effort to growing them? Why do they risk their lives searching through the jungles for them? Just what makes orchids so special?"

For a moment this knowledgable orchid expert looked at me as though I had asked the dumbest of questions and then he slowly and carefully explained, "It's simply because orchids are so very beautiful." And I guess that says it all.

Cattleya dowiana *is one of tropical America's fanciest orchids. The flower is large and predominantly white, with centers of deep, rich magenta and pink.*

A blaze of small, colorful Epidendrum stamfordianum *orchids grow on a stalk. The tropical American blossom is greenish-yellow with maroon spots.*

CALENDAR OF EVENTS

November hours: 9 a.m. to 4 p.m. Mondays through Fridays; 9 a.m. to 5 p.m., Saturdays, Sundays, November 11 (Veterans' Day), November 28 (Thanksgiving Day), and November 29.

Through November 9 MOON ROCK EXHIBIT First public Chicago showing of lunar material to be studied by University of Chicago scientists. These rock samples were collected by Astronauts Neil Armstrong and Edwin Aldrin during the historic Apollo 11 lunar landing in the Sea of Tranquility. The exhibit is in the Jade Hall (Hall 30) on the second floor, east. Free to the public during regular Museum hours.

Through November 9 FIESTA MEXICANA The exhibits of ancient and contemporary Mexican art forms continues in Hall 25, second floor, east. The Museum's salute to Chicago's Mexican-American community includes a photo display, "The Mexican-American in Chicago—1969," by Orlando Cabanban. Crafts demonstrations by Mexican artisans will continue until November 2 only.

November 15 Fall Lecture Series "THAILAND" by Kenneth Armstrong. The many facets of everyday life in this exotic country are shown against the background of preparation for possible conflict with Red China. 2:30 p.m., James Simpson Theatre.

November 22 Fall Lecture Series "PORTRAITS OF AUSTRIA" by William Moore includes glimpses of her contributions in both the arts and politics with examples of how landmarks are being preserved, such as the Spanish Riding Academy in Vienna, the last national school of its type in the world. 2:30 p.m., James Simpson Theatre.

November 29 Fall Lecture Series "OUR GREAT SOUTHWEST" by Willis Butler reviews the area's past and present and includes films of spectacular scenery with a startling airplane flight down into the Grand Canyon. 2:30 p.m., James Simpson Theatre.

November 29 - January 25, 1970 ESKIMO MASKS: THE WORLD OF THE TAREUMIUT New temporary exhibit explores the lives of people who hunt sea mammals in the hostile environment of the coast of northwest Alaska. The masks used by these people in ceremonies related to hunting, and whaling in particular, form the basis of the exhibit. Hall 9 Gallery.

Through November FIELD MUSEUM'S 75TH ANNIVERSARY EXHIBIT—A SENSE OF WONDER, A SENSE OF HISTORY, A SENSE OF DISCOVERY—continues indefinitely in Hall 3. The scope of Museum activities since its founding in 1893 is emphasized in a dramatic exhibit which includes some of the choicest specimens in the Museum's collections.

Through November Fall Journey "MEXICO" The self-guided tour for boys and girls concentrates on both Precolumbian and contemporary Mexico, depicted in Hall 8. Free Journey sheets and information on the Raymond Foundation's Journey program are available at Museum entrances.

Beginning December 1 Winter Journey "IT'S A ROCKY WORLD" explores the different kinds of rock that make up our planet and their importance in our lives. The do-it-yourself tour, sponsored by Raymond Foundation, is free to any child who can read and write. Journey sheets and information on the Journey program are available at Museum entrances.

December 7 Illinois Audubon Society Film "DEATH VALLEY—LAND OF CONTRASTS" is shown free at 2:30 p.m. in the James Simpson Theatre.

MEETINGS:

ILLINOIS AUDUBON SOCIETY, NOVEMBER 5, 7 p.m.
CHICAGO SHELL CLUB, NOVEMBER 9, 2 p.m.
NATURE CAMERA CLUB OF CHICAGO, NOVEMBER 11, 7:45 p.m.
CHICAGO MOUNTAINEERING CLUB, NOVEMBER 13, 7:45 p.m.
FRIENDS OF OUR NATIVE LANDSCAPE, NOVEMBER 30, 2 p.m.

Israeli Archaeologist To Speak

Magen Broshi, Israel Museum's Chief Curator of the Shrine of the Book, gives a special lecture for Field Museum members and the interested public on December 7. Mr. Broshi, an authority on the Dead Sea Scrolls, will speak on Archaeology in Israel: The Dead Sea Scrolls." The free lecture begins at 4:15 p.m. in James Simpson Theatre.

Slightly over a year ago, fragments of scrolls found at Masada were shown at the Field Museum in a special major exhibit entitled "Masada: King Herod's Fortress." These writings are permanently stored at the Shrine of the Book in Jerusalem.

The Shrine of the Book is part of the Israel Museum. A repository for the Dead Sea Scrolls and other ancient writings pertinent to Israel's past, this unusual-looking building is shaped like the lid of the clay jar used centuries ago to store the important documents. Today, the ancient manuscripts are protected in underground vaults located below the dome of the Shrine.

Mr. Broshi led the archaeological excavation at Tel Megadim and has participated in other important Israeli digs such as Masada, Hazor, Beit Shearim and Beit Yerah. He is a contributor to the book *From the Beginning*, which deals with various topics related to archaeology, history, art in Israel and the Israel Museum.

Mr. Broshi holds a Master of Arts degree from the Hebrew University. He also attended the University of Chicago.

Field Museum presents this special lecture with the cooperation of the Israel Government Tourist Office. Mr. Broshi is traveling in the United States under the auspices of the Israel Ministry of Tourism.

FIELD MUSEUM
OF NATURAL HISTORY
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BULLETIN FIELD MUSEUM OF NATURAL HISTORY

Volume 40, Number 12 December 1969

Eskimo Masks

The World of the Tareumiut

Tareumiut Eskimo masks representing humans and stylized whales recur often among these hunting peoples of Point Hope in northwest Alaska. In the whale masks, the animal's tail becomes a nose and whale "blowholes" are the figure's mouth. On this month's cover, and at the right, are pairs of masks illustrating a human (left) and a whale. All the masks shown in this photo-story are included in the temporary exhibit now in Hall 9 Gallery.

Eskimo Masks: the World of the Tareumiut

A temporary exhibition entitled "Eskimo Masks: the World of the Tareumiut" opened in the Hall 9 gallery on Saturday, November 29, 1969 and will run through Sunday, March 1, 1970.

A human mask with detail work shown in sculpturing of facial planes and the addition of caribou incisors for "teeth."

One of the largest and oldest concentrations of population along the barren, windswept coast of northwest Alaska is the Eskimo village of Tigara, or Point Hope. This community, located well above the 68th parallel and nearly 150 miles north of Kotzebue Sound, has been occupied continuously for at least 2000 years by people whose economy depends primarily on the hunting of sea mammals.

Like the residents of a number of other communities in northwest Alaska, the people of Point Hope have, for centuries, hunted the huge bowhead whales each spring as they move up the coast on their annual migration through Bering Strait. Whaling is a communal activity involving a number of crews, each one using a large skin covered boat, an *umiak*. Each whaling captain (*umelik*) is responsible for preparing his boat and equipment and securing the services of a crew.

Historically the *umelik* held an important position in Point Hope village life. He was normally the wealthiest man in the large extended family that, in the past, characterized village social organization, and his position and prestige were achieved through skill, energy and the inheritance of property. Very often he was a shaman (*angatkok*) as well. *Angatkoks* were men or women who had vision experiences and special powers which segregated them as persons possessing unusual control over nature and natural forces. There was always one in every whaling crew.

The mask above represents only part of a face, possibly a whale's blowholes.

Living in a rugged environment where the procurement of food through the seasonal cycle of subsistence activities was uppermost in the minds of all adults, it is not surprising that in aboriginal times the religious and ceremonial life of the Point Hope Eskimo largely centered around the important supernatural relationship between men and animals. Dances were a significant aspect of ceremonialism, the chief purpose of which was to bind the human world to the supernatural world by means of a set of formal procedures. The greatest number were designed to insure a continuous food supply. People realized that the spiritual forces were at work manipulating the basic needs of subsistence as well as life itself and that these supernatural forces needed to be placated and made aware of the wants and needs of men.

Carved wooden masks were always an important part of dances and ceremonies at Point Hope. The masked dances and festivals, in addition to influencing the spirits of game animals, also fostered social cohesiveness by enabling the entire community to take part in activities which, in addition to fulfilling serious ceremonial functions, also had considerable entertainment value.

As might be expected, a good many ceremonies in which masks were used at Point Hope were connected in one way or another with whaling. The significance of these ceremonies and the sequence of events cannot, at the present time, be clearly determined since they have not been performed since about 1910. However, it seems certain that they were intimately connected with the desire to placate the spirits of whales and thereby to insure success in whaling.

It is apparent that *angatkoks* were responsible for most of the concepts expressed in the masks from Point Hope which were meant to interpret their vision experiences. During each of his journeys to the land of the spirits, the *angatkok* would receive many fresh impressions of new spirit faces. On his return he would carve, or ask others to carve, wooden representations of the spirits he had seen.

It should be emphasized that the aim of the mask carver was not to make a realistic copy but to interpret the idea that had originated in a vision. Perhaps the most surprising thing about Point Hope masks is that despite the tremendous variety of spirits and mythological beings in the Eskimo cosmology, most carvings are in recognizable human or animal form. This fact emphasizes the close relationship between man and animals that had its expression in the spirit as well as the real world.

Because of the importance of masks in the ceremonies of the Point Hope Eskimos, many were made, and they frequently are found in collections of ethnographic material obtained in northwest Alaska around the turn of the century when the traditional way of life was still

This unusual mask is a distorted representation of a human face.

Human mask

Human mask

extant. One such collection was made in 1897 by Mr. Miner W. Bruce for Field Museum of Natural History which acquired the material the following year. Mr. Bruce had come to Alaska as first superintendent of the reindeer station at Port Clarence on Seward Peninsula. His collection contains 24 wooden masks and a single puppet doll figure. These, together with five additional masks of approximately the same age collected by John Borden for the Museum in 1927, form one of the largest collections of Point Hope masks in any museum and are the nucleus for this exhibition. Ten additional masks collected by Sheldon Jackson, a Presbyterian minister and first General Agent of Education in Alaska, in 1891 have been borrowed from the museum bearing his name in Sitka, Alaska. Besides the masks mentioned above, the exhibition will also include some related ethnographic material from Point Hope including two excellent wooden carvings associated with whaling and previously described for readers of the *Bulletin* (Vol. 38, No. 11, November, 1967).

Hand held false face

Whale mask

Mouse mask

Human mask with "teeth"

LAST VOYAGE OF Progress

The whaler Progress *in her final days, as a museum of whaling artifacts and exotic curiosities at the World's Columbian Exposition, 1893. Some of those specimens are now in the Field Museum collections.*

By Christopher Legge
Custodian of Collections, Anthropology

For nine years the whaling bark *Progress* had been laid up in New Bedford, Massachusetts. She had returned from her last voyage in 1882, and the whaling industry had been depressed. Almost certainly the career of the *Progress* was over. But there was one last voyage left in her, and that was to Chicago.

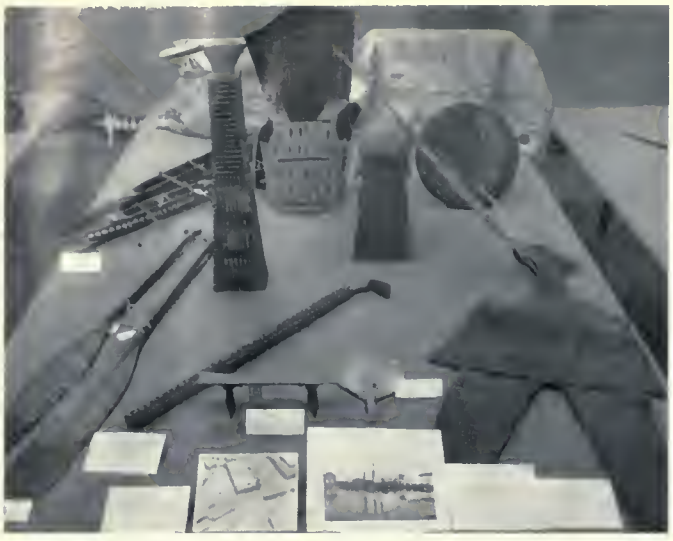
Progress had been built as the *Charles Phelps* at Westerly, Rhode Island in 1843. Stonington, Connecticut, near Mystic, was her home port for sixteen years and she whaled in the Pacific and the Indian Oceans. When the Civil War broke out, the Federal Government purchased her to be sunk at the entrance to Charleston harbor in the blockade. There was a change in plans: she was used as a store ship. At war's end she was rebuilt in New Bedford and named *Progress*.

In 1866 her career as an Arctic whaler began. She made $200,000 in two seasons in those rich grounds. *Progress* had her finest hour, though, in September, 1871, nearly all the Arctic whaling fleet lay above the Bering Strait that month. A sudden unexpected south westerly wind drove the pack ice and trapped thirty-three ships. Their crews, with some women and children, abandoned ship, took to their boats and made for the *Progress* and four other whalers which lay in clear water to the south. 1,200 souls crowded into these five ships and were landed safely at Honolulu, five weeks later.

More than twenty years later, in New Bedford, Henry C. Weaver, a Chicagoan in iron and coal, conceived the idea of displaying the *Progress* at the World's Columbian Exposition in Chicago. Weaver's mother was a member of the Phelps family, and probably related to the Charles Phelps for whom the *Progress* was originally named. He was joined in the project by several other Chicagoans. The plan was to establish a floating Museum of whaling. In June 1892, the bark *Progress*, 358 tons, left for its final berth at Jackson Park, Chicago. It was towed down the St. Lawrence, through the Welland Canal and the Great Lakes by a tug with the engaging name *Right Arm*. She was anchored in the South Pond, at the World's Columbian Exposition.

When the Exposition opened, a banner hung between two of her three masts: "Arctic Whaling Museum, 10,000 marine curiosities between decks." Admission was twenty-five cents. Weaver and his associates had assembled a great variety of "curiosities." Log books, ambergris, clothing worn by members of the Greely relief expedition to Ellesmere Island in 1883, and Eskimo ethnological specimens, some of which remain in Field Museum's collections, were among them. There was a large collection of whaling implements, now in the Peabody Museum, Salem, Massachusetts. A number of items were unconnected with the Arctic or whaling: the mummified body of an Australian aborigine, a live Fijian chief, and a quadrant which had been brought over in the *Mayflower*.

When the Field Columbian Museum was being organized at the end of the Exposition, parts of its original collection were items from the *Progress*. We received several shells from all over the world, and, along with Eskimo material, some thirty-six artifacts from the South Pacific.



On display during the 1969 Members' Night were these artifacts from the Anthropology collections, originally exhibited as part of the Arctic Whaling Museum display aboard the Progress.

This past year, in preparing for our Seventy-fifth Anniversary, a number of these items were displayed. They include a shark's tooth sword, and coconut fiber armor (cuirass, leggings and helmet) from the Gilbert Islands and two ceremonial adzes from the Cook Islands. These adzes may represent Tane, the Polynesian drum-and-adze god, or, as another theory goes, they were used by a carver in life, and ceremonially mounted after death to honor both carver and god. Unfortunately, there is no hard data on the specimens prior to their appearance on the *Progress*.

As for the *Progress*, née *Charles Phelps*, her end was unhappy. The floating Arctic Whaling Museum lost her promoters $35,000 according to one report, and *Progress* leaves history in a laconic entry in the Wreck Returns of Lloyd's Register of Shipping for the Quarter ending June 1893:

"*Progress*—On exhibition in Chicago: to be afterwards broken up.

A close-up of the bark Progress *as a floating museum at the Columbian Exposition.* Photo courtesy of the Chicago Historical Society.

Winter Journey

It's a Rocky World

The first rocks which geologists have ever been able to study at first hand from another planet were recently placed in display at the Museum. Probably few earthlings failed to watch on live TV the collecting of these specimens on July 20 by the *Apollo 11* astronauts. Some preliminary studies have been made on the moon rocks, and now samples have been distributed to investigators all over the world. We eagerly await the reports on these studies early next year.

Interpretation of the moon rocks can be made only by those with a knowledge of earth rocks and rock-forming processes. Our planet is essentially a ball of rock about 8,000 miles in diameter. From its outer layer, the crust, geologists have identified about 1,600 kind of rocks. What kinds occur below the crust and into the core are still unanswered questions.

All problems in geology go ultimately back to rocks. They are the "documents" by which geologists read the history of the earth's crust. Each rock specimen is a sample of a portion of the crust. Each rock sample has had a history, the clues to which are in the rock itself.

Rocks are all around us, even in the city where man has used several kinds as building stones. From rocks come most of man's resources, including the soil in which he grows his food. The anthropologist uses rocks to indicate the major divisions in man's cultural evolution—old stone age, new stone age, and the ages of metals.

The Winter Journey is designed to acquaint boys and girls with the main types of earth rocks, their classification, and the processes by which they were formed.

"It's A Rocky World" is Journey number 60 in a series begun in 1955. With the successful completion of each series of four Journeys, boys and girls are awarded a certificate and title: Museum Traveller (four Journeys); Museum Adventurer (eight Journeys); Museum Explorer (12 Journeys). After 16 Journeys have been completed the Explorer becomes a Beagler, ready to undertake a special Journey which carries him throughout the Museum to study some of the natural history materials observed by Charles Darwin on his famous "Voyage of the Beagle." Successful Beaglers are awarded a certificate making them members of the elite Discoverers Club.

There is no charge for taking any of the Museum Journeys. Copies of the Journey question sheet and further information on the program may be obtained at the Museum entrances. The Winter Journey runs from December 1 to February 29.

—Ernest Roscoe, Raymond Foundation

Rhododendrons like these from the Scottish estate of Glenarn, near Helensborough, will be at the height of bloom during Field Museum's tour of Britain, May 30-July 4. Phil Clark, former editor of Horticulture *magazine and Field Museum Natural History Tours Chief, will lead the tour. Leading British garden specialists will join the tour at several points. The all-expense 36-day tour is $2,445, including a tax-deductible $600 donation to Field Museum. The Tour is limited to 25 Members.*

FIELD MUSEUM'S MAGNIFICENT NATURAL HISTORY TOUR

Eden Revisited: A Tour of Britain and Its Gardens

Hidcote Manor garden in Shakespeare country has many surprising changes in mood and color as paths lead through carefully manicured hedges from one garden "room" to another. Below: Yew pillars stand between two gardens.

Stourhead, 2,500 landscaped acres, brings to life in the uniquely English way, the landscapes of the romantic era, particularly those painted by the Italians of the period. The temple on a peaceful hill overlooking the water is only one of the beautiful settings here. Members of the tour will have tea with owners of many of the featured gardens.

A Henry Moore statue faces the Edinburgh skyline from the Royal Botanic Garden, where some of the world's finest plant collections are maintained. Reservations for the British gardens Tour may be made by calling 922-9410, or writing: Natural History Tour, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois, 60605.

CALENDAR OF EVENTS

December hours: 9 a.m. to 4 p.m., Mondays through Fridays; 9 a.m. to 5 p.m., Saturdays and Sundays, and from December 22 to January 2. The Museum will be closed on December 25 (Christmas) and January 1 (New Year's Day).

Through January 25 ESKIMO MASKS: THE WORLD OF THE TAREUMIUT A temporary exhibit of carved wooden masks collected during the turn of the century at Point Hope, Alaska, are the basis for understanding the relationship between these hunting peoples, the animals they pursued, and their concept of supernatural powers. The exhibit also includes some artifacts on loan from the Sheldon Jackson Museum in Sitka, Alaska. The free exhibit is in Hall 9 Gallery.

Continuing in December FIELD MUSEUM'S 75TH ANNIVERSARY EXHIBIT—A SENSE OF WONDER, A SENSE OF HISTORY, A SENSE OF DISCOVERY—continues indefinitely in Hall 3. The scope of Museum activities since its founding in 1893 is emphasized in a dramatic exhibit which includes some of the choicest specimens in the Museum's collections.

Through February Winter Journey "IT'S A ROCKY WORLD" explores the different kinds of rock that make up our planet and their importance in our lives. The do-it-yourself tour, sponsored by the Raymond Foundation, is free to any child who can read and write. Journey sheets and information on the Journey program are available at Museum entrances.

MEETINGS:
NATURE CAMERA CLUB OF CHICAGO, December 9, 7:45 p.m.
CHICAGO MOUNTAINEERING CLUB, December 11, 8 p.m.
ILLINOIS ORCHID SOCIETY, December 21, 2 p.m.

Workshop for the Blind

THE Field Museum of Natural History is considering an exhibit specifically for the blind. In order to bring this about a great deal of information must be learned both by the department of education and the department of exhibition. We would like to conduct a number of workshops to learn answers to many questions which must be solved prior to the design of such an exhibit. Such questions as how many objects can we use and still maintain continuity, how much time is required for objects to be studied, what kind of objects are most exciting, and what kinds of verbal clues are necessary—all these must be answered. Only nonsighted persons can answer these questions. Could you bring this innovative program to the attention of a blind person of your acquaintance?

Although we will be operating in the form of an experiment, it is felt that the objects and what the observer will feel with them will be most rewarding.

We would prefer to limit enrollment to not more than four single-handicapped persons per workshop and will reserve the option to balance the workshop according to age or interest. Members and their children will be given first preference.

If you wish to participate in the workshops, please write to—

Department of Education,
Field Museum of Natural History,
Roosevelt Road at Lake Shore Drive,
Chicago, Illinois 60605

including the following information: Name, age, address, telephone, membership name, date preferred—January 10, 17 or 24, Saturdays at 10:30 a.m.

SEARCHING FOR AN UNUSUAL GIFT?

Give Membership in Field Museum of Natural History and you will be remembered and appreciated all through the year. Your shopping can be completed by a telephone call to 922-9410, ext. 206.

History of Life and Earth

A TEN-WEEK non-technical course on the theoretical aspects of the problems and questions of the Earth Sciences will be offered jointly by Field Museum of Natural History and the University of Chicago. Broadly, the course will include those aspects of Natural History that are customarily included in the domain of geology and paleontology.

Varieties of subject matter will be discussed, but the main emphasis will be focused upon the problems that are of current general interest:

The mechanism of the formation of matter in stars and in the solar system;

Recent discoveries concerning the understanding and description of the solar system;

The internal anatomy of the earth and the theories of its development;

Early history of the process called life, its antiquity and its fossil record.

The course will be offered at the University of Chicago, Downtown Center, 65 East South Water Street. It will be conducted by paleontologist Dr. Matthew H. Nitecki and mineralogist Dr. Edward Olsen of Field Museum. The lectures from 11:30 A.M. until 1:00 P.M. will start on January 7.

For further information and registration form please write or phone Mrs. Maria Matyas, or Miss Barbara O'Connor at the University of Chicago, Downtown Center, FInancial 6-8300.

FIELD MUSEUM
OF NATURAL HISTORY
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